FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

SEPTEMBER, 1958

IN THIS ISSUE

A Quick Look into Modern Fire Inspection Techniques

Injecting Chemical Additives into Water Streams

Comparative Tests of Suction Connections to Hydrants

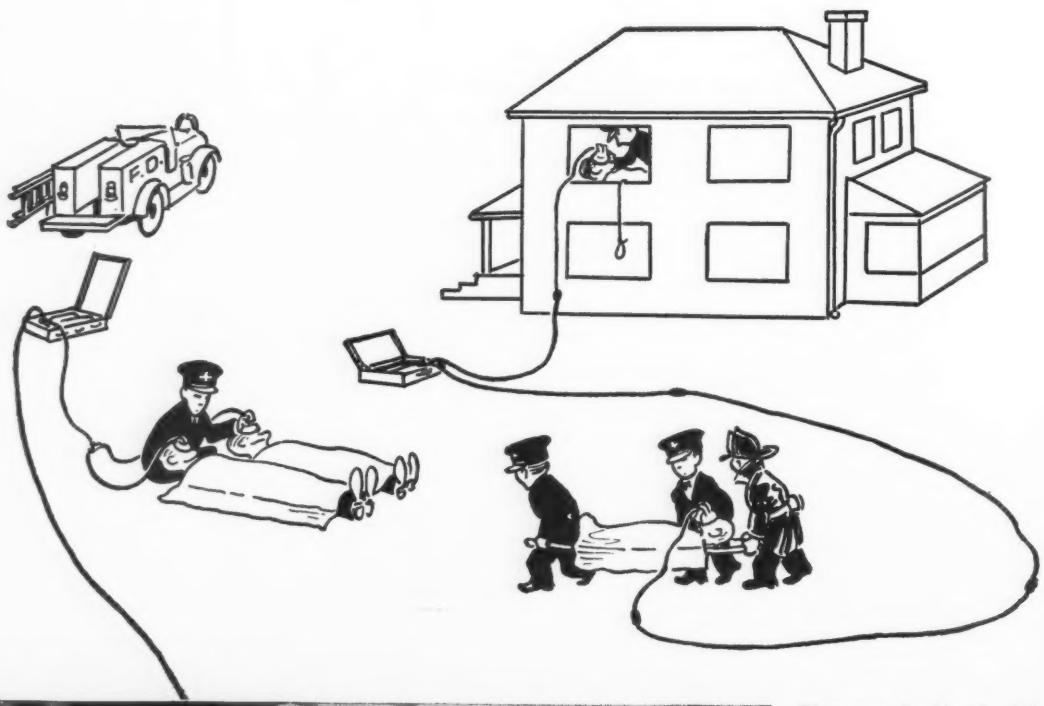
OHIO STATE UNIVERSITY
SEP 30 1958
LIBRARY

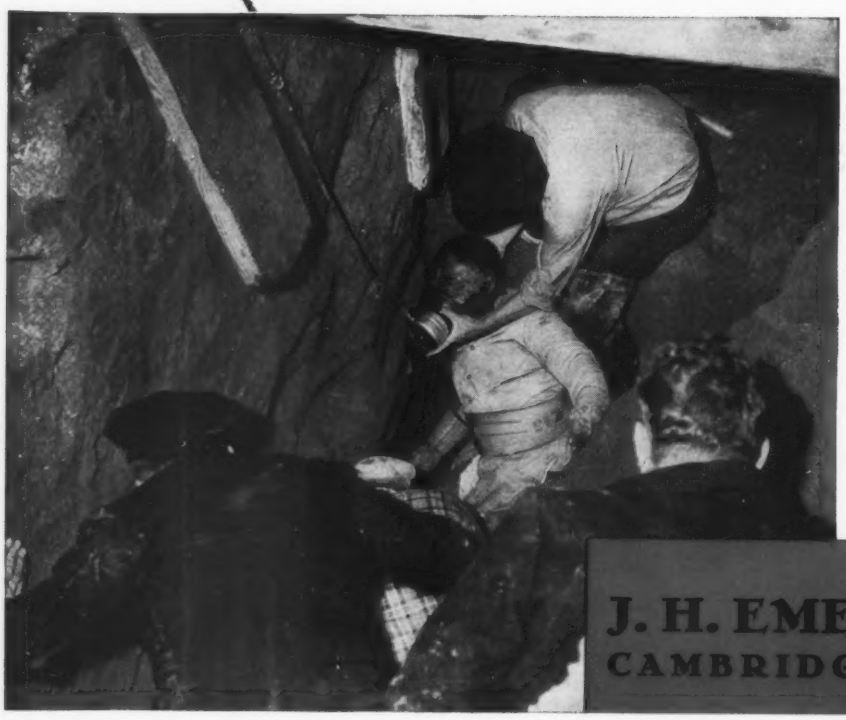
New York firemen battled for two hours on August 16 to control blaze in four-story lumber storage building located on lower east side

Library,
Ohio State University,
Columbus, 10, Ohio

EXTENSION HOSES

give you maximum speed to reach the toughest spots





You can double the life-saving coverage of your Emerson Resuscitator with extension hoses and small, hand-held mechanisms. The hoses couple end-to-end instantly, to bring the breath of life hundreds of feet beyond the oxygen tanks. "T" connections help. Aspiration is possible as well as resuscitation or inhalation.

Down a shaft or a cave-in . . . under an overturned vehicle . . . up difficult stairs (using a line out the window) . . . in a chemical tank or a ship's hold . . . your Emerson's speed saves lives.

J. H. EMERSON CO.
CAMBRIDGE 40, MASS.

CLEAR THINKING- Foresight is better than hindsight *especially* in firefighting problems. When you are buying new apparatus, a little foresight about how you are going to get that new truck through congested traffic will save you a lot of headaches. *Don't let the signals on your truck be an afterthought!* Plan for them and specify them just as you do horsepower, pumping capacity and other features. Clear thinking fire officials *specify* FEDERAL Class Q Sirens and Super Beacon Ray lights.

CLEARS TRAFFIC!

With FEDERAL SIGNALS *you* can be sure of getting that truck through traffic to the scene where its full capacity will pay off.

Show *your* foresight today — write for FEDERAL Catalog #300.

The Florissant Valley Fire Department at Florissant, Missouri selected a 1000 G.P.M. pumper on a Diamond T chassis equipped with a Hall Scott 590 GV-3, 252 h.p. engine. Manufactured by Fire Fighter Truck Company of Rock Island, Illinois, it is equipped with their new streamlined body which provides better protection to personnel as well as advanced styling.

Clear Thinking on the part of the purchaser and the experienced recommendation of the manufacturer put a FEDERAL Q Siren on the hood and a FEDERAL #174 Super Beacon Ray light on the roof.

FEDERAL SIGN and SIGNAL Corporation

8702 S. State St., Chicago 19, Ill.

FIRE ENGINEERING

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Letter from a Manufacturer

Many readers have complimented us on the job we do in keeping them posted with the latest information in the field. However, they pay us double compliments when they tell our advertisers of their interest and the fact that it was stimulated by reading these pages.

When we receive letters, too, from manufacturers of fire equipment telling us of results far beyond their expectations, it is particularly gratifying.

Here's a typical one:

"Since mention of our new product in the July issue of FIRE ENGINEERING we have been deluged with inquiries from dealers, individuals and fire departments. It is remarkable how it created so much interest and it is very pleasing to us." The letter also mentioned that some of the requests for further information had come from outside the continental limits of the United States.

Bouquets such as this show the degree and extent of readership of these pages and assist us in measuring our progress. More importantly, they indicate significantly how well we are discharging our responsibility to both our readers and our advertisers as "The Journal of the Fire Protection Profession."

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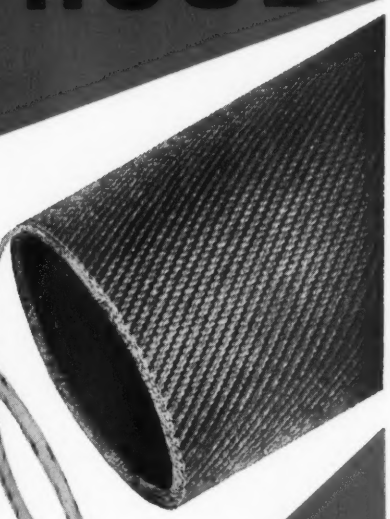
Fabric FIRE HOSE

PRESENTS



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AND

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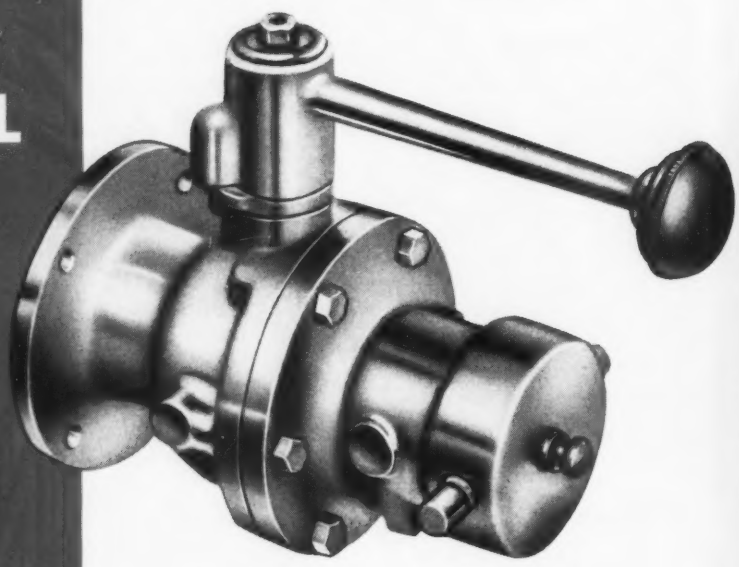
FABRIC FIRE HOSE COMPANY

EXCLUSIVE MANUFACTURER OF FIRE HOSE SINCE 1869

SANDY HOOK, CONN.

IN CANADA *Pierre Thibault* CANADA, LTD., LTEE., PIERREVILLE, QUEBEC

Here's why the HALE BL Discharge Valve is PREFERRED by most Fire Chiefs



Let's Look at the Facts:

$2^{8}/_{10}$ Feet of 2½ Inch Fire Hose

The difference in pressure loss between the Hale BL "Venturi-type" Valve and any "full-opening" valve is equal to the loss incurred in $2^{8}/_{10}$ feet of 2½ inch fire hose, regardless of volume flowing.

Compare the following ADVANTAGES of the Hale BL Valve with any "full-opening" valve.

- **MORE COMPACT ▸ LIGHTER ▸ STRONGER—Because there is less area exposed to pressure.**
- **BETTER OPERATION—Easier to open and close.**
- **LESS COSTLY—It is manufactured in large quantities.**
- **MINIMUM FRICTION LOSS—The perfectly rounded waterways provide low flow-resistance.**

Evaluate the facts—then join the group who prefer the Hale BL Valve.

Note: HALE makes the type B Valve to meet Specifications which still insist on a straight through full-opening Valve.

Write for FREE Nozzle Pressure Card to: **HALE FIRE PUMP CO.** Conshohocken, Pa.

B.F.Goodrich

Easy on, easy off with lightweight B.F.Goodrich hose

THAT B.F.Goodrich hose is easier to handle, on or off the truck. It's light, flexible—easy to coil after a fire, easy to rack back at the station. More important, this lightweight hose saves vital minutes when laying lines at a fire.

It is actually 22% lighter and much more flexible than ordinary hose. That's because the "filler cords" which go around the hose and carry the load under pressure are made of Dacron fiber. These cords are thinner, yet stronger than cords used in reinforcement on heavier, bulkier hose.

This hose also has B.F.Goodrich end protection. This extra layer of hard-woven cords extending 12" from the coupling adds 100% more strength to the coupling area. End protection was one of the reasons why the Huntington, West Virginia fire department (pictured above) chose B.F.Goodrich hose. "We like the end protection B.F.Goodrich gives us near the coupling, which has always been a weak spot," said Chief John W. Gallagher.

Another important saftey factor which can be specified is Superseal protection. This exclusive B.F.Goodrich treatment gives 10 times more resistance to mildew and rotting than ordinary treatments. It also protects against moisture absorption and freezing, increases hose's resistance to fire.

And most important, the Superseal treatment that brings you extra safety and longer hose life, costs no more than ordinary treatments. Your B.F.Goodrich fire hose distributor can give you more information, or write *B.F.Goodrich Industrial Products Co., Dept. M-437, Akron 18, Ohio.*

B.F.Goodrich *fire hose*

MIDWESTERN

Safety Clothing

for Men of ACTION!

The Original MIDWESTERN
STRIPED SAFETY COAT
Reduces Accidents—Saves Lives

When working under hazardous conditions in smoke, fog, dust and darkness, you deserve the safety protection found *only* in the Midwestern Striped Safety Coat. The highly visible yellow stripes are *rubberized as part of the material* . . . not glued, painted or sewed on. Tests show that Midwestern yellow stripes retain their natural color and have the same durability as the black fabric.

There are many imitations but no substitute for the superior quality, design, fabric texture and outstanding safety features of MIDWESTERN SAFETY CLOTHING FOR FIREMEN!

MIDWESTERN COMBINATION SAFETY SUIT

The Midwestern Rubberized Coat and Bunker Pants combination make it easy for firemen to keep both warm and dry even in the most severe weather. Close fitting collar and elastic inner sleeve keep out sparks and water. Pants have double-stitched seams, reinforcing rivets at points of strain. Both garments available with detachable wool linings.

For complete information on our full line of safety clothing for firemen, see your Midwestern dealer. A letter to the factory will also bring you literature and materials for your inspection.

NONE GENUINE WITHOUT THIS TRADE MARK

MIDWESTERN SAFETY MFG. CO. Mackinaw, Illinois

Manufacturers of the Famous **MACKINAW Safety Coats**

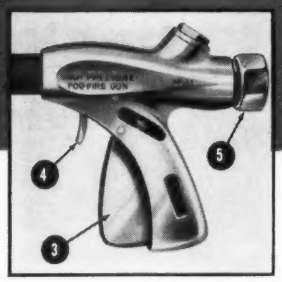
KILL FIRES FASTER

with the JOHN BEAN 29 Fog Fire Fighter Gun

Hard-hitting, triple-action fog cools, isolates and smothers fire

Adaptable to all booster hose systems

Can be fitted for foam applications



1 PROTECTIVE WATER SCREEN — Special nozzle provides an effective, vertical water screen to protect operator's face and shoulders from heat.

2 FAST, EASY STREAM ADJUSTMENT — You quickly and easily change from close-up fog to long range stream patterns by simply rotating the sleeve.

3 NATURAL TRIGGER GRIP—Gun discharges by pressing easy-to-use fist-fitting grip lever.

4 POSITIVE GUN LOCK — To relieve arm muscles, stream can be set in any pattern and locked. Pressing the grip instantly unlocks the gun.

5 SPECIALLY DESIGNED HOSE SWIVEL (Accessory) — Prevents hose twisting; and eliminates undesirable coiling when fighting fires. Available in 1" I.P.T. or N.S.T. threads.

Versatile John BEAN Gun adjusts quickly and easily to all FIRE-KILLING FOG PATTERNS

Wide angle pattern

Middle range pattern

Long range fog pattern

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ORIGINAL FOG FIRE FIGHTING GUN

Food Machinery and Chemical Corporation

SEND COUPON for details TODAY

I am interested in the original John BEAN 29 Fog Fire Fighting Gun.

Please send complete information to me.

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Title_____

Address_____

City_____ State_____

Mutual Benefit chose Fyr-Fyter Equipment for security backed by service!

FYR-FYTER EQUIPMENT AT MUTUAL BENEFIT LIFE INCLUDES:

42 combination hose and extinguisher cabinets • 5250 ft. of linen hose with chrome couplings, nozzles • 20 single extinguisher cabinets • 126 water extinguishers (for cabinets or wall racks) • 28 CO_2 extinguishers to protect utility rooms and kitchens.

Mutual Benefit Life Insurance Company's new 20-story home office in Newark, N. J., is completely protected against all fire hazards by Fyr-Fyter equipment. Fyr-Fyter offers the highest quality and most dependable fire protection equipment, backed by the most thoroughly trained and experienced sales and service organization in the industry. The fire protection survey of the Mutual Benefit building, equipment recommendations and installation supervision were all part of the individual attention and professional service Fyr-Fyter extends to each customer. Fyr-Fyter also gives prompt recharge service, plus helpful advice on new or increased fire hazards.

Let Fyr-Fyter equipment protect your building! Fyr-Fyter offers a complete line of portable fire extinguishers, cabinets, hose, hose racks and reels, hose couplings and nozzles, valves, brackets, etc. Write today for free catalog describing 1200 items sold by Fyr-Fyter—largest *professional* sales and service organization in the industry!

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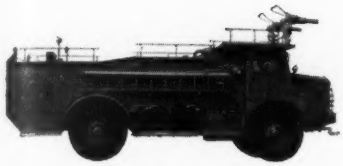
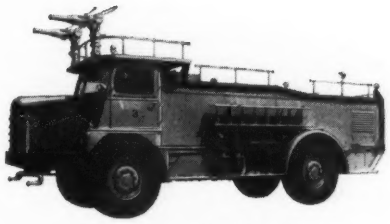


WASHINGTON, D. C., NATIONAL AIRPORT

FIRE JEEP — CRUCIBLE STEEL CO. OF AMERICA

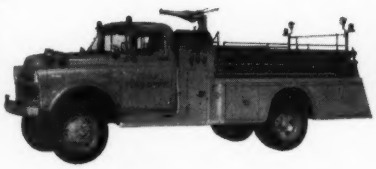
U. S. COASTGUARD

ROCKWOOD EQUIPMENT RIDES ON LEADING FIRE TRUCKS

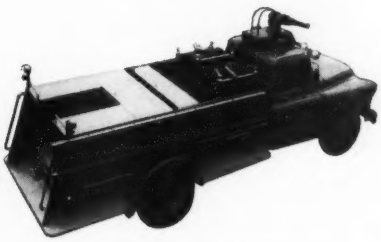


AIRCRAFT CRASH RESCUE TRUCK
FAIRCHILD AIRCRAFT CORP.

U. S. AIR FORCE TYPE 0-11-A



CUBA FIRE DEPT. — NEW YORK



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The best testimonial of Rockwood's fire equipment is its users. In airports, industries, refineries and municipalities — Rockwood fire fighting equipment is seen on the finest fire trucks.

Fire trucks get the benefit of famous Rockwood nozzles and proportioning systems producing WaterFOG, FogFOAM, FOAM and WET — each designed to conquer different types of fires. By means of Turret Nozzles, these trucks discharge large volumes of FogFOAM, FOAM or WaterFOG. By means of Ground Sweep Nozzles, they fight flowing gasoline fires and protect firefighters and trucks at the same time. By means of Hand Lines, they control fires in hard-to-get-at areas.

If you want precision fire fighting products — by all means send for Rockwood's free booklet. Just fill in and mail the coupon at the right now. Rockwood products have been tested and listed by Underwriters' Laboratories, Inc. Distributors in all principal industrial areas.

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Engineers Water . . . to Cut Fire Losses

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Please send me your illustrated booklet on Rockwood fire fighting products.

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Title.....

Company.....

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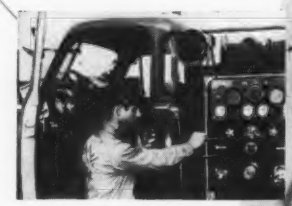
Zone.....*State*.....

"We finally got a real county-wide fire-fighting TEAM

WITH MOTOROLA 2-WAY RADIO"

says Mason Lankford, president of the Tarrant County, Texas, Volunteer Fire Fighters Association



Pump operator hears instructions over noise of pumper from weatherproof speaker mounted outside the cab.

Dual frequency base station transmitter in town of Lake Worth combines fire and police radio.

Handie-Talkie portable enables Chief A. T. Huffines to move about freely as he directs operation.

It took two disastrous fires near Fort Worth, Texas to prove that a small community fire department is helpless to overcome a major blaze without outside help. It proved the value of mutual aid *and* the need for proper communications between scattered volunteer departments.

So the Tarrant County Volunteer Fire Fighters Association came into being. Under Mason Lankford's aggressive leadership, the association has grown from its original 13 units to a total of 28 active departments —all welded into a closely knit team with Motorola 2-way radio. There are 34 base stations (28 department stations, and 6 for industry, armed forces and civil defense), 98 mobile units and 27 Handie-Talkie Radiophones—making the system one of the largest of its type in the nation.

Mr. Lankford says, "the prime use of our Motorola system is to help us get equipment moving faster, before the fire gets a foothold or goes out of control. But there are many other applications. For instance, Handie-Talkie portables enable fire-fighters to communicate with each other *at the fire*, wherever they are, and coordinates the work of boats in rescue and recovery operations. With Tarrant County encircled with radio equipped fire equipment, everyone in the various communities sleeps better at night"

Small communities or large cities, Motorola 2-way radio is ready to help you multiply your efficiency and give greater protection. Learn all the benefits. Write, phone or wire Motorola today.

MOTOROLA

2-WAY FIRE RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering...product...customer service...parts...installation...maintenance...finance...lease.
"The best costs you less—specify Motorola."

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"SUPER-FORGE"

DROP FORGED BRASS COUPLINGS

LIGHTWEIGHT

NON-CORROSIVE

DURABLE

Three Lug *"SENSIBLE LUGS"*
on Male and Female with Higbee Indicators

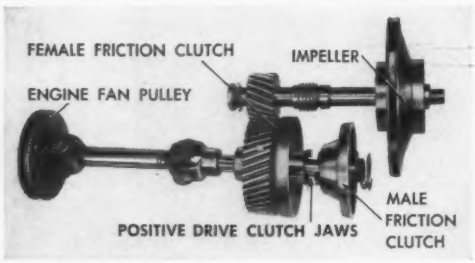
Available in 1-1/2 and 2-1/2 inch sizes

POWHATAN BRASS & IRON WORKS
RANSON, WEST VIRGINIA
In The Same Location Since 1892

only ONE fire pump has it...

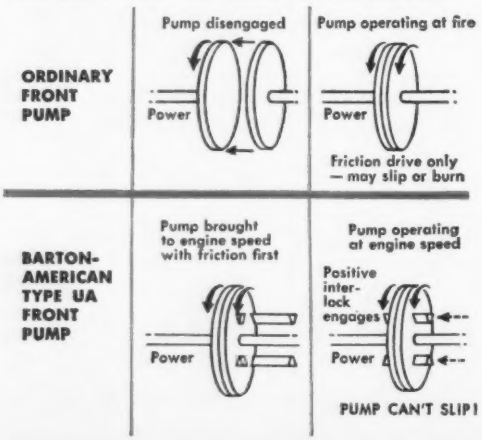
THE CLUTCH THAT *CAN'T* SLIP!

PUMP OPERATING POWER TRAIN



Gear-driven centrifugal design . . . pressures to 400 pounds for high-pressure Super-Fog Guns or large straight streams.

DIAGRAM — SIMPLIFIED TO SHOW BASIC PRINCIPLE OF POSITIVE DRIVE CLUTCH



That's right — you'll never stand helpless at a fire with a slipping or burned-out pump clutch — if you're operating a Barton-American Type UA Front Mounted Pump!

This clutch *can't* slip, because it has an *exclusive*, positive interlocking feature. The friction surfaces merely bring pump up to engine shaft speed. Then the interlock takes over . . . and you have unfailing positive drive. The *only* front pump that provides this *extra* safety feature is the Barton-American Type UA!

BETTER DESIGN GIVES BETTER PERFORMANCE

Other superior features include well-designed, dependable frost-proof construction that adds extra summer cooling capacity too . . . rugged, top-quality pump construction . . . fully automatic, frost-proof, engine vacuum primer . . . convenient controls . . . and dual universal joint spline-shaft power take-off.

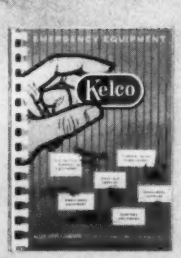
These items, plus our *exclusive* Service Pump Plan are fully described in the Type UA Pump Bulletin.

WRITE FOR YOUR COPY OF BULLETIN 8330-C

★ AMERICAN ★
FIRE PUMP COMPANY

P. O. BOX 219-A BATTLE CREEK, MICHIGAN, U. S. A.

You just can't miss with equipment like this . . .



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KELCO SUPPLY COMPANY

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*if your men aren't wearing Bullard helmets... head protection is costing you too much!

MORE FIRES FOR YOUR MONEY!

Expose rugged Bullard HARDBOILED fire helmets to searing flame (high as 2,000° F.), freeze them, soak them in boiling water... these grueling punishments won't soften or weaken a Bullard fire helmet's protective characteristics! This is the only fire hat that exceeds Federal specifications. No Fire Helmet is tougher, yet few are as comfortable to wear. Light and cool on your head... made from non-conductive fiber glass they weigh only 20 ounces. In a choice of permanent non-fading colors, these helmets are equipped with replaceable suspensions that adjust to all standard head sizes. Today, ask to see how Bullard Fire Helmets make your budget go further... help you fight more fires for the money!

Stop First Aid Water Damage

New Bullard Fire Department First Aid Kits are 100% water proof. Every supply is separately sealed in Polyethylene wrappers. Includes the new approved, spray-on, pain killing burn treatment... *First On Burns.*

Economy Gas Masks

Equip your units with gas masks at a 12% saving. Bullard "SMOKE-EATER" gas masks contain exclusive money saving filter for toxic dusts, fumes, mists, fogs, and smoke.

BULLARD
INDUSTRIAL SAFETY EQUIPMENT

E. D. BULLARD COMPANY SAUSALITO, CALIFORNIA

See your local fire equipment dealer or write for catalog of complete line of fire helmet accessories.

COCOA MODERNIZES WITH MACKS. The Cocoa, Fla., Fire Department goes into action with its new, custom-built, triple combination Mack pumper. This 225-HP unit features an automatic priming two-stage centrifugal pump, rated at 750 gpm, and carries 1200 feet of 2½-inch hose, 400 feet of 1½-inch hose (preconnected to a 300-gallon water tank), 150 feet of 800-lb. booster line . . . plus a 24-foot extension ladder, 14-foot roof ladder, respirators, etc.

For 10 years, Cocoa, Florida, has enjoyed...

perfect performance with Macks

Here's what Chief J. F. MacMillan of the Cocoa, Florida, Fire Department says about his Mack fire apparatus:

DEPENDABLE: "The unfailing performance of our first Mack pumper, purchased in 1948, was the reason why we bought our new Mack last fall."

EASY TO HANDLE: "Mack has engineered manual steering systems that eliminate the difficult maneuvering we experienced with other makes."

LONG LIVED: "In ten years we've never had the head off our older Mack. On our new Mack, the engine turns over at an easy 2600 rpm while pumping at 1130 gpm (50% more than the rated 750), thereby increasing engine life and reducing maintenance needs."

ECONOMICAL: "Our gas mileage has been improved at least 25% with Macks, and we've had no parts replacements on either engine."

FASTER INTO ACTION: "Our new Mack pumper is equipped with automatic priming which enables us to start pumping water within seconds after the vehicle stops."

* * * *

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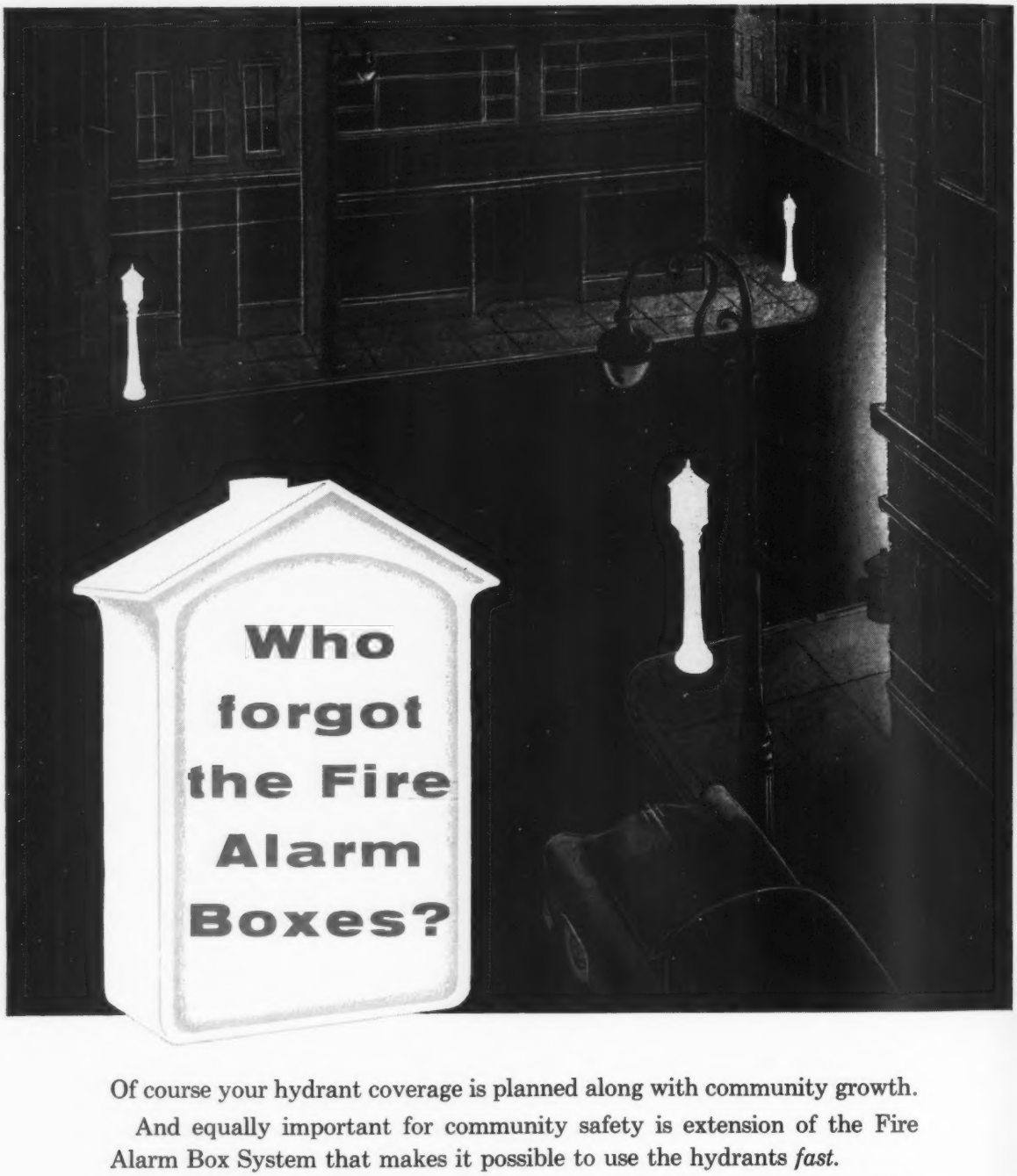

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VOLUME 111, NO. 9

FIRE ENGINEERING

THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

SEPTEMBER, 1958

An Important Editorial Announcement

FRED SHEPPERD

ROI WOOLLEY

DONALD O'BRIEN

FRANK HANIFIN

We take this means to announce the following changes in the FIRE ENGINEERING editorial staff, effective with the October issue.

Donald M. O'Brien becomes Editor, succeeding Roi B. Woolley who is retiring. Don joined the staff on April 1, 1956 as Assistant Editor and was advanced to Associate Editor on September 1, 1957. His promotion to Editor is a well-deserved recognition of his background and experience in the fire service, and his progress in the field of publishing. A former officer of the Auburn, N. Y. Fire Department, he served for six years as a field representative of the Bureau of Fire, New York State Division of Safety. Prior to joining FIRE ENGINEERING, he was a member of the Engineering Department, New York Fire Insurance Rating Organization.

The newest member of the FIRE ENGINEERING family is Frank Hanifin, who becomes Assistant Editor. Frank recently retired from the New York Fire Department after 21 years service. During the nine years prior to his retirement, he was associate editor of "WNYF," the justly popular official publication of the New York Department. He has studied journalism at Fordham and New York Universities, bringing to FIRE ENGINEERING a unique combination of practical fire fighting experience and sound literary training.

We are pleased to announce also, that the two "elder statesemen" of the editorial staff, Fred Shepperd and Roi Woolley, will continue their association with FIRE ENGINEERING.

Fred Shepperd, after more than 45 years association with the magazine and its predecessors, relinquishes active work as Editorial Director to give more time to revision of the "Fire Chiefs Handbook" and other text books which he has authored.

Roi Woolley, who joined the FIRE ENGINEERING staff in 1943, is retiring to take up residence in San Diego, Calif. He becomes Contributing Editor and will continue to write special articles.

With our editorial staff continuing to benefit from the long and rich background of experience and guidance of these outstanding authorities, FIRE ENGINEERING will be in an excellent position to maintain its standards and continue to march forward in its service to the fire field.

The Publishers

Inspections are not limited to paid fire departments. Volunteer firemen can and do provide this essential community service as shown in this photo of Merrick, L. I., N. Y., inspectors checking blocked exit in drug store location—*Hirshon Studios photo*

A Quick Look Into Modern Fire Inspection Techniques

A check list of practices, with emphasis on apparatus field inspections for year 'round use

By ROI B. WOOLLEY

THE MODERN FIRE DEPARTMENT is maintained by its community for the purpose of providing citizens protection against loss of life and property by fire.

The present-day conception of a fire department by both its members and the public is rapidly shifting from that of not many years ago when putting out fires was considered the primary job of the department. Today it is conceded that full measure of service to citizens requires as much attention to preventing fires as extinguishing them. Also, there are many more calls for special services made upon the fire forces than heretofore.

No one in his right mind will question that preventing fires is better than having to fight them. The question rises as to the best, most effective way of preventing them, and who is to do the job.

It will also be conceded that intelligently made inspections are the backbone of fire prevention work — inspections preferably conducted by those who have the primary responsibility of extinguishing fires that may eventuate.

Purpose of inspections

At the risk of trite repetition, let us quickly review the purposes of modern fire inspection. Authorities offer different objectives, but here are the primary ones:

1. To locate and correct conditions creating undue fire hazards

2. To provide fire fighters with a working knowledge of the conditions bearing upon the fighting of fires in their own territory—and to less extent, in areas which they may have to protect

3. To make sure that fire protection facilities in the occupancies are being properly maintained and their uses and applications are thoroughly understood

4. To create favorable public relations; through proper contacts and educational efforts the fire inspector can greatly enhance the standing of his fire department

5. To secure proper maintenance of existing facilities to provide against start and spread of fire, and where possible, the adoption of such additional measures as may be necessary for further safety to life and property as structural and occupancy conditions change with the times

6. To check on compliance with the laws, ordinances, codes and regulations dealing with the foregoing, particularly those matters which come within the jurisdiction of the fire department; to recognize important violations and detemine the means and methods of handling them

There are other factors involved, their importance depending upon the people and places to be considered in the inspection, their susceptibility to fire, the human inability to comprehend the seriousness of fire and to take corrective measures. Logically, the same procedures followed in inspecting a factory will hardly do for the private home. Any inspection program must be sufficiently elastic to accommodate it to the kind and class of premises and occupancy to be surveyed.

The human element

A fundamental of inspections too often overlooked by fire fighters assigned to inspection work—and even by full-time inspectors—is the human equation. It is not the structural or the material occupancy with which the inspector has to deal as much as just plain people.

It is one thing to discover fire hazards and another to induce the owner or occupant of the premises to eliminate them, if he does not know what the hazards are and most important, why these factors are considered fire hazards. It is well for the fire inspector to remember that he looks at buildings and their contents through different glasses, so to speak, than does the layman.

In the light of this relationship, it is well to try to understand the attitude of the other fellow—the owner or occupant of the premises to be inspected—and to get something of his philosophy.

In this connection, we quote some of the remarks of John L. Bryan, writing in the Maryland Fire College's *Fire Service*

Bulletin. Mr. Bryan says, "It is important that we try and understand the attitude of the owner or occupant of a building that we plan to inspect. First, the person in this building is engaged in the process of making a living and is very busy, and we are asking him to give us some of his very valuable time. I said 'ask' and not 'demand.' After all, as a fire inspector, you are a guest in the person's establishment and you should act as a guest even though you may have vested in you certain legal authority and have the legal right to inspect the premises.

"This is essential since the attitude you create in your relationship with the owner or occupant will be directed toward the recommendations that you make for the establishment of fire safety in the building. If you have created a harmonious attitude, the recommendations will be received in the same light. However, if you have antagonized the individual, you can easily see how much attention your recommendations will receive.

"You must remember that you are making a fire inspection, and as such, you are looking and proceeding through the entire building. However, in many cases, the owner forgets all about the word 'fire' in this phrase and concentrates on the word 'inspection.' Such a concentration often results in the owner feeling that the inspector is fault-finding, and is trying to tell him how to run his business. This situation largely occurs when the inspector does not explain to the layman the purpose and advantage of a fire inspection. By the very nature of the word 'inspection' this impression of mistrust and suspicion is often strengthened.

"Webster defines inspection as follows: 'An inspecting, critical, official examination.' It is of interest to note also that the word 'inspector' is often connected with policing agencies. Webster defines 'inspector' as 'a police officer in charge of a number of precincts, ranking below a superintendent.'

"Considering the definitions of the words inspection and inspector, it is easy to see why the owner of a building often takes the defensive when approached by a person requesting to make a fire inspection. Some inspecting agencies have adopted the use of the word 'survey' in place of 'inspection,' to avoid some of these psychological complications.

"Another factor that often complicates the situation from the viewpoint of the owner is the variety of agencies and inspectors that often make a fire inspection of a building. Let's take the example of the operator of a place of public assembly in the State of Maryland.

"First, this gentleman is approached by a young man from the Maryland Rating Bureau to inspect the building and determine the insurance rate; however, this to the owner is a *fire* inspection.

"Next, the state fire marshal inspects the building, because one of the patrons has complained about locked doors, this gentleman being accompanied by the county fire marshal. Then, since the operator has taken out fire insurance on the contents of the building, he has the building inspected by a fire insurance company inspector. Oh yes, of course, the owner of the building has insurance on it and an inspector from this company shows up to inspect the building.

"Now, all of these gentlemen have inspected the building with a specific purpose serving a specific interest, but they have all made fire inspections and have left recommendations. We must not forget that the local fire chief has yet to inspect the building to check fire safety and to facilitate his pre-planning fire strategy.

"The point is . . . the operator of this business is a layman and he has received recommendations from five or six persons who are considered experts in fire inspections and fire safety . . . we know that no two fire inspectors are going to make all their recommendations exactly alike, due to the difference in the experiences, training and personality of the individual. However, the owner of the business will not know this unless we tell him. Thus, he will notice the discrepancies in the inspection recommendations, and he may very well say, 'These fellows can't even agree among themselves; don't they know what they are doing?' Then, of course, he disregards all the recommendations. . . . And mind you, I didn't mention all the numerous salesmen of one type or another that call on the layman to make 'fire inspections' for the purpose of selling fire extinguishers, fire doors, fire alarm and sprinkler systems.

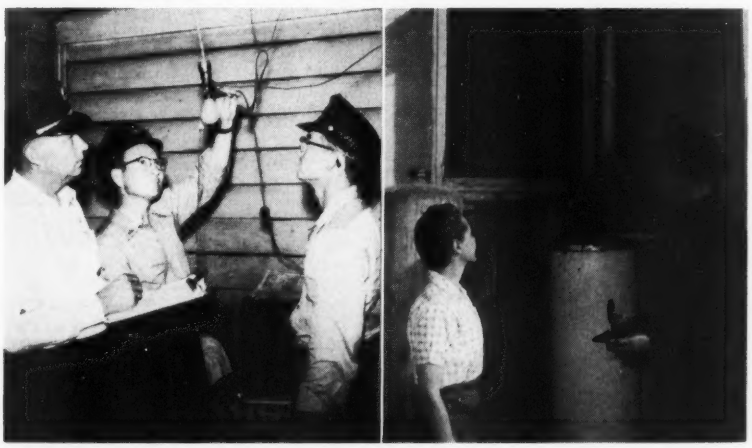
"I ask you, then, is it no small wonder that when you enter a business establishment to save the occupants and the owner from the horrors of fire, you may be greeted with something less than open arms."

—*N.Y.F.D. photo by Hellriegel and Heffernan*

New York Fire Department inspector points out hazard of accumulated trash to foreman in paper shop. A return visit will be made to see if compliance with removal order is carried out

Moral obligations

Mr. Bryan then submits some of the moral obligations to the agency which the inspector represents and to the general public, as well as to the person whose



Left: Columbia, S. C., firemen-inspectors check an "octupus" electrical socket in ramshackle rental property. A major life hazard exists in this type of occupancy because of such practices —*Columbia F.D. photo.* **Right:** Maintenance of water heating plant is checked by L. A. County fireman during residential inspection. Dangers of rusted vent pipe are carefully explained to housewife—*L. A. County F.D. photo*

establishment he is to inspect. He lists the following:

1. You must explain to the person you contact who you are and show proper identification. You will want proper identification and it is only courteous for you to reciprocate.

2. Explain the purpose of the inspection and advantages of it. Point out what a fire could do to the establishment and the owner's moral obligations to his employees and the community.

3. Respect the obligations of the person's business on his time and do not become annoyed at his interruptions or previous commitments.

4. You are morally obligated to point out to the person every condition that is a fire hazard. If you are doubtful as to a condition, admit it and ask for information on the process, and check your reference sources before making a commitment.

5. Since you are allowed to cover the entire premises of the building, you may obtain information that has no relation to fire safety, such as manufacturing procedures or processes that may be considered as trade secrets. This information is confidential and should be treated as such inasmuch as you are morally obligated to the person who has allowed you to inspect his property. You are essentially a guest in his establishment.

6. Information such as the number of employees, contemplated expansion of the building or buildings, reduction in working force, etc., may seem harmless. However, such information, if gained by other business or labor organizations, could be harmful to the owner. You are morally responsible to protect his best interests.

7. Fire inspections should not be discussed outside the office or with persons desiring information unless they are official agencies making written requests for information that concerns your agency.

8. You as fire inspector are morally obligated to conduct yourself in a business-like manner and never put yourself in a compromising position.

9. You are responsible to your agency and to yourself to record all features immediately as they are observed, and note such factors at the time of the inspection, its initiation and completion.

10. In the inspection of equipment of any nature, you are morally responsible for damage to it. Have the owner or his delegated representative check the equipment you wish inspected.

11. You, as an inspector checking the accuracy of any detail, should be sure you do not create a fire or health hazard in your procedures.

12. Remember at all times that you are a guest of the person whose establishment you are inspecting and it is only courteous to act as a guest.

Company team beginning residential fire inspection duty. Apparatus field inspections have become popular in many areas of the country and hold promise of lessening losses of life and property—*Los Angeles County F.D. photo*

Apparatus field inspections

In the foregoing, we have discussed the purposes of inspections in general and the human element, with emphasis on the moral obligations of the inspector and his inspection agency. These observations apply whatever the type of building and/or occupancy to be studied, and whoever is designated to do the inspecting.

They apply particularly to home inspections which are becoming increasingly popular and effective in reducing the incidence of fire.

Nothing brings the fire department into closer contact with the citizens of a community than these apparatus field inspections. At the same time, nothing calls for greater diplomacy, tact and judgment on the part of the inspector than meeting the householder in his or her own domain.

Apparatus field inspections, or radio field inspections, or whatever they may be termed, came into being largely through the application of mobile two-way radio by the fire service. This development has been chronicled by FIRE ENGINEERING over the years. Although the advantages of apparatus field inspections in both the fighting of fires and their prevention have been widely headlined, many fire departments qualified to do so, have failed to give such inspections consistent and serious trial.

The reasons for this vary, but in most cases are the result of ignorance of the possibilities of such endeavors, or failure to adopt and maintain a sound inspection working plan. It will be admitted that apparatus home inspections call for a different technique of treatment than do inspections of multiple dwellings, or commercial, industrial and public buildings. But whatever types of occupancies the apparatus field inspection is designed to cover, there are certain fundamental procedures which it is well to bear in mind in planning and effectuating the inspection program. The following check list is offered:

1. Determination of inspection program by the responsible fire officials and promulgation of the necessary effectuating orders

2. Chronology of inspections—dates, hours, periods (related to the company and/or other unit; popular hours are from 9:30 a.m. to 12:30 p.m. and from 1:00 p.m. to 4:00 p.m.)

3. Schedule to provide for omission of inspections on recognized holidays

4. Have the necessary forms and other material for laying out and recording operations, these to conform to the scope and extent of the inspection; such data include: A field inspection sector map, apparatus field inspection portfolio, fire prevention journal to determine block or blocks of operation, and field record forms (cards or sheets—some departments prefer cards, using different colors for different occupancies)

The apparatus field inspection portfolio may contain the following:

1. Field record cards

2. Fire prevention educational literature for general and specific distribution

3. Copy of company violation orders previously issued

4. Violation order book (similar to summons book) and standard form of orders

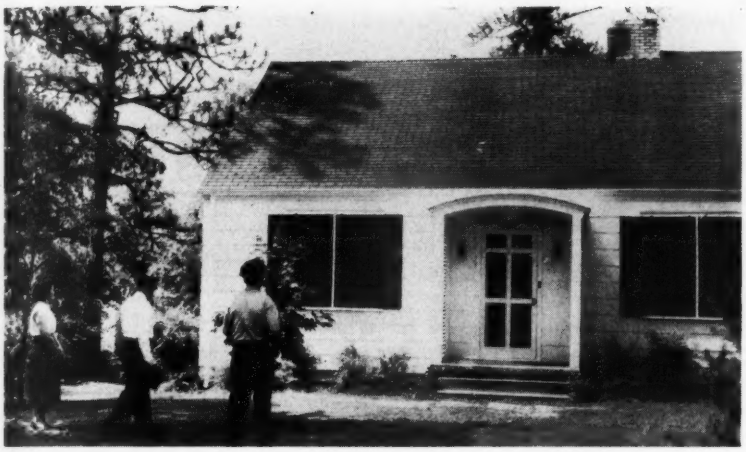
5. Summons book (for violations); necessary data on court calendar; locations, instructions for issuance, etc.

6. "No Smoking" signs and such forms as are required for application for permits, certificate of fitness renewals, company building inspection manual, etc.

7. Copies of pertinent and important department orders, directives affecting the apparatus field inspection

8. Necessary indelible pencils, ballpoint pen, paper, carbon, etc.

9. Record and report forms



Exterior inspections of residences frequently turn up hazards which may be overlooked by average property owner. Here Columbia, S. C., team is pointing out missing chimney brick to housewife—*Columbia F.D. photo*

The operational practice of laying out and energizing the apparatus field inspections varies according to the department but it is the general custom for the officer on duty the day before the scheduled field inspection to lay out the work, supplies, etc., after checking on the inspection sector or zone maps, the AFI portfolio and journal records, to determine the block or areas of operation. Any special orders or instructions are made ready for the inspection crews the next day.

The following steps are usually taken before the company unit leaves quarters:

1. If placards are used (and the majority of departments conducting these inspections do so), they are affixed to the sides of apparatus.

2. The minimum crew to man units should consist of not less than an officer and three men on radio-equipped pumper or quad (most cities do not utilize other form of apparatus, such as ladder trucks). Some cities switch engine or pumper and ladder company personnel, with the exception of motor pump operators and tillermen, who are retained in their respective quarters.

3. All members on these inspections shall be properly uniformed; this usually consists of uniform cap and badge, uniform coat and clean work trousers. During hot summer months in many cities coats are optional. Where apparatus home inspections are conducted, members are usually required to wear full regulation dress.

4. Appropriate radio notification must be made to dispatcher; make entry in journal (if unable to leave quarters, notify dispatcher and enter in journal).

5. Officer will check on schedules for AFI duty of nearby units for effective fire fighting operations. It is advisable for all units doing this inspection work to be informed of the status of other battalions and/or areas for fire operations.

The following procedures are taken after the unit has left quarters and is in the field:

1. Maintain constant radio contact at all times and respond to assigned alarms or as directed by dispatcher.

2. Check over violations issued previously within the area to be inspected for compliance, etc.

3. Proceed to block indicated for inspection operations. It is the procedure in many departments to circle the block of operations clockwise.

4. First and most frequent inspections, logically, should be of unusual buildings and occupancies where life hazard is greatest.

5. Interior inspection procedure differs according to departmental preferences, based on property and premises to be surveyed, departmental limitations and facilities, etc. Some plans call for allocating experienced men to certain occupancies on a floor-per-man basis. For others, two or more men are assigned. A number of departments conduct group inspections. It is claimed by some that the two-or-more-man inspection avoids risk of misunderstanding and any comeback complaint or claim on the part of the occupants or owner, at the same time providing useful information for pre-fire fighting plans for more than a single fire fighter. In home inspections most departments insist on interior inspections by uniformed men working in pairs.

6. Men take into the building the necessary record card or other forms, including check list if such is used. If necessary, permit applications can be filled out and signed by the occupant and violations and/or summons issued at the time. Pertinent information relating to violations should be recorded. If conditions warrant, officer can be called to check personally. Inspectors should initial or sign all records for department file.

7. Officer in charge supervises all operations and assists members where necessary, as above.

8. Issue summons for illegal parking near hydrant where violation is observed during inspection duty.

9. In proceeding to or from inspection area, or while in area, note and report pertinent irregularities such as blocked roads, entranceways and hydrants, partially or concealed warning signs, dangerous neighborhood structural conditions, wiring, etc., not actually germane to inspection for fire and life hazards. Report same to appropriate municipal agencies.

Although this completes field inspection operations, some of the important details are yet to come after return to quarters. These include:

1. Report (preferably by telephone) arrival to dispatcher and enter necessary data in journal.

2. Remove placards from apparatus.

3. Return record cards and forms to their proper place, making sure that reports of properties partially or not inspected are earmarked for subsequent inspection.

4. See that cards or other records of buildings inspected are properly filled in, violations noted and properly signed. Follow the prescribed fire department report system for making permanent and temporary records. This will include treatment of old and new violations, changes in occupancies, etc., issuance of summons for violations other than fire hazards. See that reports are duly typed as required by department regulations.

5. Forward the necessary reports for concurrence and action.

6. Many departments hold periodic post mortems or critiques on the subject of inspections, at which the system's procedures and failures are reviewed. The tendency is to hold field inspection plans as elastic as possible and to continually revise and improve strategy and programs to meet changing developments.

7. A final detail may concern the release of information gathered from inspections to press or others. This calls for considerable discretion. No facts should be publicized which may directly or indirectly cause unfavorable departmental repercussions. If any such information is released, it must come from highest echelons. □□

Acknowledgement: Portions of this study are taken from the following whose cooperation is gratefully appreciated: The National Board of Fire Underwriters, Special Interest Bulletin No. 5, "Value and Purpose of Fire Department Inspections"; The University of Maryland Fire Service Bulletin, "Ethics of Fire Inspections," by John L. Bryan; and "W N Y F," official publication of the New York Fire Department, "Apparatus Field Inspections—a Check List," by Sanford Goldberg, Lieutenant, Engine 282.

Another in the Series of Chemical Studies

A SURVEY OF ROCKET PROPELLANTS

PART 2

By PAUL F. DeGAETA and ARNOLD A. WEINTRAUB

THE TERMS "exotic" or "zip" fuels are frequently mentioned in the literature and newspapers. The description "exotic" was applied in the early stages of rocket fuel development when new combinations, not in common usage at the time, were proposed. In 1952 the Navy set up Project Zip to develop superior fuels and some of the combinations to come from this research were dubbed "zip" propellants. Neither of these designations refer to any one specific system but either of them could apply to the boranes.

In theory, pure hydrogen with a yield of 52,000 BTU/lb is the most logical choice for a fuel; its density, however, is too low and even when liquidfied is ten times as bulky as gasoline. Beryllium, on combustion, gives up 29,000 BTU/lb but is rare, costly and highly toxic in chemical compounds. Boron's 25,000 BTU/lb places it 40 percent above the less than 19,000 BTU/lb hydrocarbon rating and on combination with hydrogen produces an even higher heat content. Boron, therefore, seemed a likely candidate for investigation as a fuel possibility and the three basic compounds listed below were considered.

BORANES

Boron derivative	*Formula*	*State*	*Heat Value Btu/lb*
Diborane	B_2H_6	Gas	31,000
Pentaborane	B_5H_9	Liquid	29,000
Decaborane	$B_{10}H_{14}$	Solid	28,000

Diborane is the basic substance in the group from which the others are derived. An interesting sidelight on its combustion in air is that it yields boric oxide, the active reaction product in the extinguishing mechanism of trimethoxyboroxine, a recently developed agent used on fires involving certain metals. Like any other gas fire, diborane, burning with the green flame characteristic of boron compounds, should not be extinguished unless its source can be shut off. Small laboratory leaks resulting in minor fires can be extinguished by carbon dioxide or dry chemical. Chlorinated hydrocarbons should never be used. The fire hazard of diborane and derivatives such as aluminum borohydride, $Al(BH_4)_3$, is intensified by their spontaneous flammability in air.

The Callery Chemical Company advises that, "Diborane is now supplied as a compressed gas in 100-gram, 1-pound, 2-pound and 4-pound lots. The special returnable cylinders and crates are shipped by Railway Express. Since not more than five days are allowed in transit, diborane is shipped only on Mondays and Thursdays, so that the fifth day will not occur on a weekend."

In addition to the use of boranes as a primary fuel, investigation is also in progress to test its use as an additive for increasing the efficiency of other systems. Pentaborane, for instance, added to aircraft fuel can increase range by 50 percent. One boron-based aircraft fuel related to the boranes, designated as HEF-2 by the Olin Mathieson Chemical Corporation, and used for oxygen breathing engines, while not spontaneously flammable can ignite on contact with hot surfaces. If it is involved in fire, foam is the most effective extinguishing agent.

Although the boranes are toxic, it is difficult to specify all the effects on the human body due to a lack of clinical experience. Diborane attacks the lungs in contrast to pentaborane and decaborane which affect the central nervous system. Detection of low concentrations of boranes is an exacting procedure because of the problems of chemically analyzing for them. Several monitoring devices are under development but there is no commercial borane detector on the market. A 3 percent aqueous solution of ammonia will neutralize spills and wash boranes from the skin, garments or floors.

While the exact composition of borane fuels is a secret, one surmise is that they are probably modifications of decaborane which changes to the liquid state upon the addition of hydrocarbon groups to its molecule. They are stable, can be transported safely and stored without deterioration. Because precise information on any one borane-based rocket fuel with regard to its chemical composition and physical characteristics is classified information, it is not possible to discuss specific fuels in this light and assign to each the proper extinguishing methods based upon stated properties.

Storage compatability

Where operations involve materials that are highly reactive and in addition are hypergolic on contact with certain other chemicals, the storage problem becomes a primary consideration and requires specification in the most minute detail.

Marine Corps anti-aircraft missile, an adaptation of Navy's "Terrier," uses a solid propellant booster. Twin missile carrier is used for field transportation—*U. S. Marine Corps*

Compatible Storage Groups

Group "A"
Nitric acid
Mixed acid (Nitric and Sulfuric)

Group "B"
Aluminum borohydride
Diborane
Other metal borohydrides
Pentaborane

Group "C"
Anhydrous ammonia
Hydrazine, anhydrous
Hydrazine, hydrate

Group "D"
Aniline
Monoethylaniline
Furfuryl alcohol

Group "E"
Calcium permanganate
Solid sodium permanganate

Group "F"
Compressed hydrogen gas
Compressed inert gas

Group "G"
Compressed oxygen gas
Compressed inert gas

Group "H"
Ethyl alcohol
Methyl alcohol

Group "I"
Gasoline
Heptane
Kerosene
Octane
Pentane

Group "J"
Hydrogen peroxide

Group "L"
Liquid fluorine

Group "N"
Liquid hydrogen

Group "O"
Liquid oxygen

Group "R"
Nitromethane
Tetramethane

Army fueling specialist stands ready to "wash down" crew members should spillage occur during fueling of missile on launching pad at Cape Canaveral—*U. S. Army*

Storage compatability is one phase of these requirements and listed at left is a portion of the table set up by the Army for fuels and oxidizers. Those chemicals in the same group are deemed to be compatible for storage because individual characteristics are such that their presence together does not increase the normal hazard of storage alone.

Quantity-distance tables are also charted for fuels and oxidizers. They specify minimum allowable distance between storage of fuels and oxidizers, minimum distance of each substance from inhabited buildings, public railways, public highways and the minimum distance between storage facilities in order that flame or explosion in one will not propagate to another.

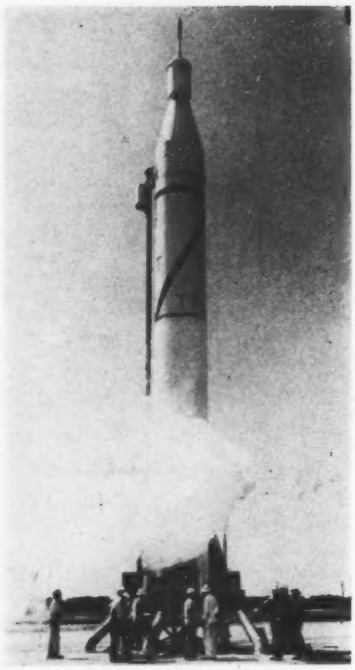
Fueling specialists prepare to service Jupiter-C rocket at Cape Canaveral, Fla. Note use of demand breathing apparatus and 0-10-type crash unit behind fuel truck—*U. S. Army*

Fire hazard

The fire hazard of propellants varies with the components involved. A consideration of physical and chemical characteristics will give some understanding of extinguishment problems. Among the important related properties are density, solubility or miscibility in water, vapor pressure, flammability limits, toxicity and combustion temperatures of the propellants.

Many of the fuels are alcohols or hydrocarbons and fires can be handled in accordance with standard procedures for this type of operation. In some cases, however, these basic fuels contain additives which may be highly toxic and indicate the use of a self-contained breathing apparatus.

In general, the rocket fuels of today, unless otherwise indicated, are miscible with water which continues to be our primary extinguishment agent in the forefront as the most potent weapon for fighting propellant fires. Application in the form of a coarse fog or spray at not less than 100 pounds per square inch pressure, will fulfill the requirements for extinguishment and dilution. One Army test involved a propellant system containing an aniline-furfuryl alcohol as the fuel and red fuming nitric acid as the oxidizer. Each component was in a small earthen pool separated by a wall which was blasted away to initiate the combus-



Jupiter-C rocket with mounted Explorer satellite stands on Cape Canaveral launching pad as technicians make final adjustments
—U. S. Army

tion. Application of water at the rate of 1,500 gallons per minute extinguished the fire in 45 seconds.

In the laboratory, small quantities can be handled efficiently with carbon dioxide or dry powder extinguishers.

Where more stringent requirements are not specified, storage and handling should be in conformance with I.C.C. regulations.

The future in fuels

While the results of present research and development may appear to approach the ultimate, still more seemingly fantastic possibilities are being explored. On the boards are a number of nuclear fission designs, one of which envisions a small atomic pile to heat hydrogen several thousand degrees and blast it through the exhaust nozzle.

Power through the utilization of free radicals may be the supreme achievement in space technology. Free radicals are unstable fragments of chemical compounds which have been observed in flame and high speed reactions, existing only for millionths of a second. Upon recombination, these free radicals release the enormous heat necessary to approach a maximum degree of efficiency. Normally gases such as oxygen and hydrogen exist in the molecular form of two atoms combined (O_2,H_2). In the upper atmosphere there is a large source of these gases in the uncombined single atom or free radical state (O, H). Two directions of research are in progress to harness this vast reservoir of power. An attempt is being made to isolate and freeze free radicals in the laboratory and another announced method makes use of the atmospheric free radicals. Nitric oxide has been used as a catalyst in the 60 to 70 mile atmosphere region, the level of the single-atom oxygen layer. A solid catalyst to line the rocket vents so that the recombination process can take place within the device and create thrust producing heat has been reported by the Air Force's Cambridge (Mass.) Research Center as a promising possibility. □□

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"Skin Bank" for Burns

A living "skin bank" has been established in the Surgery Department of the University of Michigan Medical Center, Ann Arbor, Mich. Reserved for the treatment of serious burns, the bank contains narrow strips of human skin 12-thousandths of an inch thick. These are stored in a special nutrient fluid at controlled temperatures to provide "homografts" in emergencies. Although skin grafting has long been used in the treatment of deep third degree burns, the use of homografts—tissue from another person—is a relatively new development.

Dr. Irving Feller, U-M instructor in surgery who has charge of the skin bank, has pointed out that the skin from one individual cannot be grafted permanently onto the body of another, except in the case of identical twins. Successful grafts must come from the patient's own body. This has meant that victims of extensive burns formerly had little chance of survival because there was not enough undamaged skin left to patch up the burned area. Infection and death were almost certain.

Modern refinements in surgical techniques, however, have succeeded in using homografts as a temporary life-saving substitute. The homograft is a translucent layer of living cells taken from the donor's back, just below the shoulders. It is about the same as the peeling that results from sunburn.

To apply this delicate tissue, surgeons remove it from the test tube "bank" and place it onto the wound like a strip of gauze. Properly placed and treated, the homograft starts to grow like the patient's own skin. Days or even weeks may pass before the body reverses itself and begins to reject the homograft as a foreign substance. Meanwhile the surgeons have been taking repeated skin grafts from the patient's own body called "autographs" to permanently repair the burned area.

Bill Bender

Air Line Pilots Fear Homemade Rockets

The Air Line Pilots Association has warned that increasing experiments with homemade rockets have become a potential menace to air liners. The Association has made a plea to youthful amateur enthusiasts not to launch rockets near airports, landing and take-off patterns or airway routes for fear of bringing down an aircraft.

D. W. Spickelmire, chairman of the union's air safety council and a United Airlines pilot, in a report to the association, noted one instance of a group of boys in Utah launching a missile that soared 5,400 feet. "This is getting into the altitudes we fly," he observed, adding that other accounts have listed altitudes up to 14,000 feet. He also cited a launching which sent a rocket to 1,500 feet in the air-traffic pattern of Oakland International Airport near San Francisco. He said two others were fired from the same location.

Left: Burned and broken carboy containers and cartons removed from fire-blackened trailer transport in Dallas, Tex. Note burned trailer, surrounded by transports to muffle an anticipated explosion, and fire fighters with high pressure and low velocity watch lines. **Right:** Dallas fire fighters removing and overhauling containers of explosive and toxic chemicals following transport fire. Extinguishing task was made difficult by lack of authentic information of van's cargo. Note use of breathing equipment by men inside transport. Twenty-nine firemen required treatment in the operation—*Dallas F.D. photos*

Chemical Transport Fire Emphasizes Need for Tighter Safety Regulations

By CHIEF C. N. PENN
Dallas, Tex., Fire Department

TWENTY-NINE DALLAS, TEX., FIREMEN were sent to a hospital for treatment of inflamed eyes and for observation, after a peculiar occurrence involving chemicals.

On Sunday, June 8, at 1:09 p.m., Engine Company 42 was sent to investigate reported unusual conditions existing in a trailer van parked in the yards of the Central Freight Lines Company. When the company arrived, a strong, sweet odor permeated the area in spite of a 21-mph wind blowing from the south. This strange scent and the wisps of smoke which seeped from the trailer was the reason for the emergency call.

The 32-foot-long trailer van was parked among a long line of trailer transports in one of the Southwest's largest truck terminals located in a semi-commercial district of the city. Posted around the sides of the big vehicle were signs which read "Danger." Dull thudding noises from the inside of the van emphasized this point. Terminal employees reported four explosions before Engine 42 arrived on the scene, which was less than three minutes from the time the alarm was received.

As their first act, fire fighters immediately pulled the trailer van into an open drive between rows of trailers to facilitate the fire fighting operations and lessen the exposure hazard. A department radio message calling for a battalion chief was sent while the terminal supervisor went to get the bill of lading at the request of firemen. This document proved of little help in determining how they should proceed. The meager description of the cargo revealed only the fact that the contents were 205 carboys of a flammable liquid with no other specifications. It was obviously an oxidizing material as it bore the red label. The shipment was being made from a chemical firm in New York to a firm in Orange, Tex. No special instructions or any indication of the chemical's nature that would be of any aid to fire fighters were given on the bill.

While the situation was being sized up—actually a matter of seconds—more muffled reports came from the trailer. The decision to use a high pressure pumper was reached and Engine 11 was called to the scene.

It was now 1:20 p.m. and smoke still issued from the cracks around the door of the vehicle and settled heavily and ominously on the ground. A thin trickle of liquid dripped from the truck body, but no flames accompanied it. Tentative tests with water on the spilled liquid showed no reaction. Following these rough tests, a hole was cut high in the front of the trailer and a high pressure nozzle was inserted. Other trailers were located alongside the stricken van to serve as a cushion and divert the anticipated explosion away from the terminal building and the hundred-odd freight-laden trailers in the yard. Explosions which eventuated, some more intense than others, continued to jar the area, but with no apparent increase in either fire or heat, and the truck's body panels remained intact and the paint unblistered. As the water coursed through the hose lines, the pressure jerked the nozzle out of the hole. A minute later, however, with the nozzle firmly replaced, the pumping proceeded.

The application of water into the trailer had an immediate effect, and the explosions partially subsided. Success with the initial hose line led to the application of a second nozzle which was introduced in the side at the rear of the trailer. When this line came into play, all the threatening noises ceased.

During these tense moments, in an effort to gain additional data on the transport's cargo, the terminal manager had telephoned the firm in Orange, Tex. In-

Continued on page 879

Injecting Chemical Additives into Fire Streams

Wetting agents and mechanical foam liquids can increase the extinguishing efficiency of water under many conditions. Getting these elements into the hose streams in proper proportion is an engineering problem, some factors of which are discussed herein

A STAFF REPORT

THE USE IN FIRE STREAMS of chemical additives such as wetting agents and air foam liquids is becoming more and more popular as improvements have appeared in the methods of introducing them into the streams.

Sufficient time has elapsed since the appearance of the first mechanical proportioner designed to accomplish this purpose, to weigh the several different proportioners and proportioning systems on the market. Nevertheless, because of lack of suitable nomenclature, for one reason, the subject of proportioning additives into the fire hose stream has generally been confused and misunderstood, leading to wrong conclusions by users and those contemplating such installations.

The following information is intended to assist in clarifying some of these misinterpretations.

In-line eductor

The use of the in-line proportioner is a simple and effective method and one of the first means employed. The word "proportioner" in itself is a misnomer; it should be called "eductor" as it will not automatically draft varying degrees of liquid over a wide range of pressures and water flows. It will pick up about the same quantity of liquid regardless of the amount of water that is put through it.

An eductor works on the venturi principle. A pressure jet of water is passed into a large chamber thus creating a low pressure area. The atmospheric pressure then pushes the liquid up the pick-up tube or pipe into this low pressure area, mixing it with the water stream.

As stated previously, the eductor is probably the simplest and best way presently available to proportion two liquids when the eductor is operated at the correct pressure. The amount of hose on the discharge side of the eductor is limited because of the pressure drop across the venturi; with a well-designed eductor this should not be more than 30 per cent. It is important that the nozzle used be equal in gallonage to that of the eductor.

These eductors may be used with permanent piping in the fire trucks, on the discharge gate or in the hose line. In no case does a liquid other than water pass through the pump.

Around-the-pump proportioner

To overcome the pressure loss of the eductor, the so-called "around-the-pump" type of proportioning was devised. It is this type of proportioning that has caused the greatest confusion in nomenclature.

The designation around-the-pump has led many to think that the drafted liquid does not enter the pump but bypasses it; this is not the case. In order for the proportioner to take full advantage of the pump pressure, all the picked-up liquid must pass back through the pump. Many additives, especially those with wetting characteristics, may attack the lubricants in the pump packings, causing them to function improperly, a condition which many fire chiefs have expressed concern about in the past. The around-the-pump type must also operate at not more than 10 psi inlet water pressure. Therefore, if operating from a hydrant, the suction flow must be throttled to less than 10 psi. When using this type of proportioning, the pump is not capable of doing other work. It can produce foam or wet water only.

To use the around-the-pump proportioner, it is practical to have built-in tanks to hold the additives. These must be specially built for the particular liquid involved; the preferable construction is stainless steel, or steel with a plastic lining. Tanks must be equipped with an automatic breather valve to allow for expansion and suction of the liquid and foam liquid tanks should be built with an expansion chamber to prevent coagulation and sedimentation which would block the draft pipe.

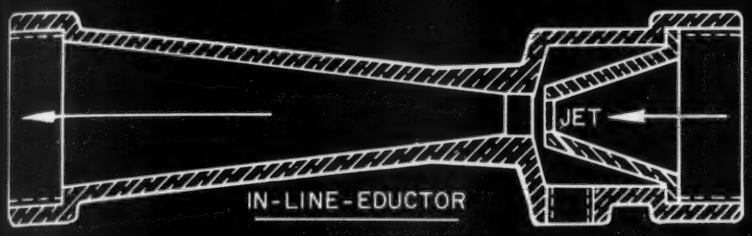
All liquids in containers furnished by the manufacturers will remain in good condition almost indefinitely as long as the container is continuously sealed. However, when exposed to the air, unless placed in a properly constructed tank, trouble may occur from corrosion, fermentation or sedimentation.

Other forms of proportioning are available such as: The flowrator-oriflowrator (see FIRE ENGINEERING July 1958) and oriface plate systems. These are usually used in stationary systems for protection of large risks such as oil storage tanks, etc., or on fire and crash trucks designed to produce large quantities of foam.

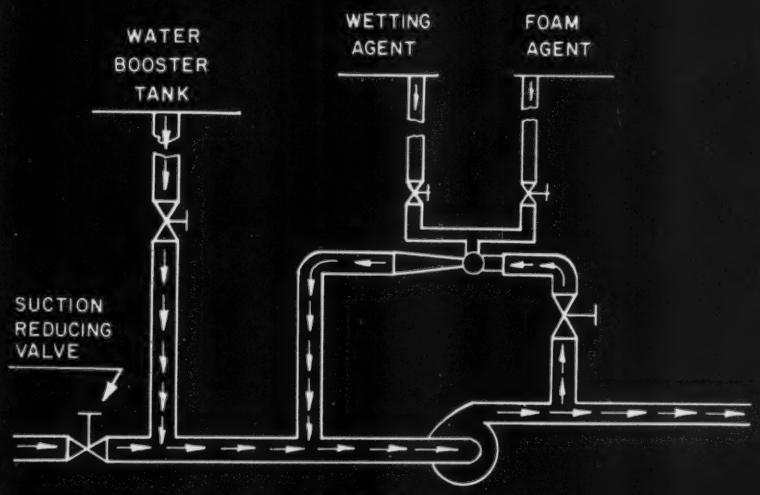
Bypass eductor

The most recent innovation for the fire service is the bypass eductor. This is an in-line eductor with a built-in bypass, which allows the unit to be placed in the hose line at all times.

Water can be discharged without the loss of pressure because the water does not go through the venturi of the eductor. However, by simply turning a valve, the eductor can be put into service. This saves breaking down a line in order to put either foam or a wetting agent on the fire. The other discharge gates on the fire truck may be used for water simultaneously while the additive is being used. In addition, the additives may be kept in the containers furnished by the manufacturer and therefore should cause no trouble. □□

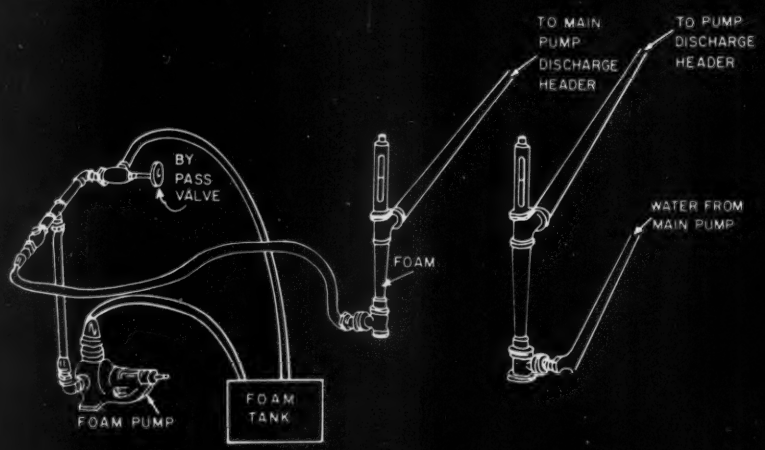


IN-LINE-EDUCTOR

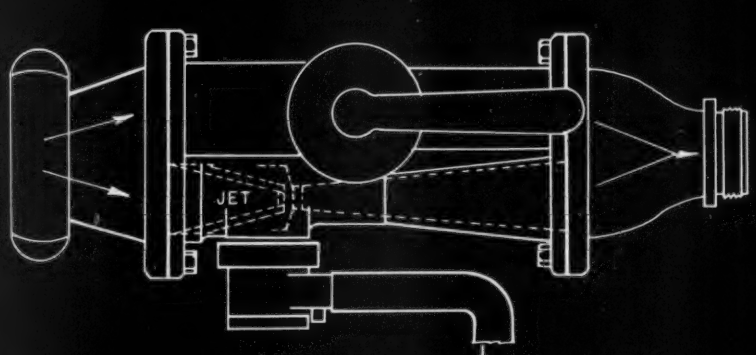


AROUND-THE-PUMP PROPORTIONER

BELOW: FLOW-RATOR TYPE OF PROPORTIONER IS USEFUL FOR QUANTITIES ABOVE 100 GPM. OPERATOR ADJUSTS FLOW OF FOAM LIQUID BY MEANS OF BYPASS VALVE UNTIL INDICATOR MARK ON FOAM SIDE IS AT SAME LEVEL AS THAT ON WATER SIDE. SOLUTION IS THEN ACCURATELY PROPORTIONED

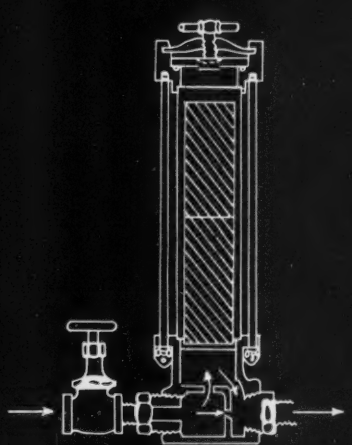


BELOW: CARTRIDGE-TYPE WETTING AGENT MIXER USES EDUCTOR PRINCIPLE. PART OF WATER IMPINGES ON COMPOUND CUTTING IT AWAY IN PROPORTION TO FLOW. ADDITIVE IS MIXED WITH STREAM AND IS FORCED INTO HOSE OUTLET



BYPASS EDUCTOR

WET WATER OR
FOAM AGENT



Cooperative Efforts Confine Threatening Oil Farm Fire

By CLIFF DEKTAR

CLOSE COOPERATION between Southern California fire fighting agencies brought that area's most destructive refinery fire under control May 24 after a two-day battle in Signal Hill, Long Beach.

Eleven tanks were destroyed, cracking equipment damaged, countless automobiles ruined, and two men died—but the valiant efforts of firemen stopped the flames from destroying other tanks and refineries in the area, business firms and parts of the Long Beach Municipal Airport and Long Beach Air Force Base.

Particularly notable was the use of a helicopter for size-up and the first major test of the Vernon Fire Department's recently acquired 2,000-gpm Chiksan gun.

Signal Hill Chief Lloyd Colson reported that his department received an alarm of trouble in one of the refinery's 80,000-gallon capacity fuel oil tanks at 1:58 p.m. and rolled its two engine companies on stand-by. As they were approaching the area, the tank containing 50,000 gallons of oil blew. Chief Colson barely saved his car and said that if his crews had arrived a few moments earlier, the vehicles might have been destroyed.

As the blazing oil spread in a river through the center of the refinery, Signal Hill requested assistance from the Long Beach Air Force Base, Long Beach Fire Department and the Los Angeles County Fire Department.

Air Force Chief Ralph Graham already had three 0-10s and a pumper rolling. One of his lookouts had spotted the fire and when the blast occurred, the equipment was immediately dispatched. The leading 0-10 after moving three blocks toward the adjacent refinery, discharged its foam applicators on the burning oil running in the street sometimes one and a half feet deep.

Long Beach Chief Frank Sandeman dispatched Engines 2, 3, 5, 7, 9, 10, 12, 13, 14, 18; a 75-foot aerial and three ambulances to the fire. The ladder pipe on the aerial was used to good advantage.

Responding to the call for assistance, Los Angeles County sent Engines 45, 245, 94, 23, 105, 209; Ladder 23; Rescue 45, in addition to commissary, utility and other equipment.

County Fire Chief Keith E. Klinger arrived direct from headquarters by his fire department helicopter, sized up the fire and was then picked up at the nearby airport by Battalion 9 Commander Noel Manchester. Chief Sandeman, in turn, flew over the fire for additional size-up and placement of equipment. Chief Colson directed operations in the center of the refinery where a stand with hose lines was attempted.

Chief Klinger, noting spot grass fires starting at the air base, called for three mountain patrol units to work this area. They were dispatched from a patrolman's school in session at County headquarters.

As dark fell, a huge battery of searchlights was brought in from Los Alamitos Naval Air Station to illuminate the area, while other refineries offered foam and fire control experts.

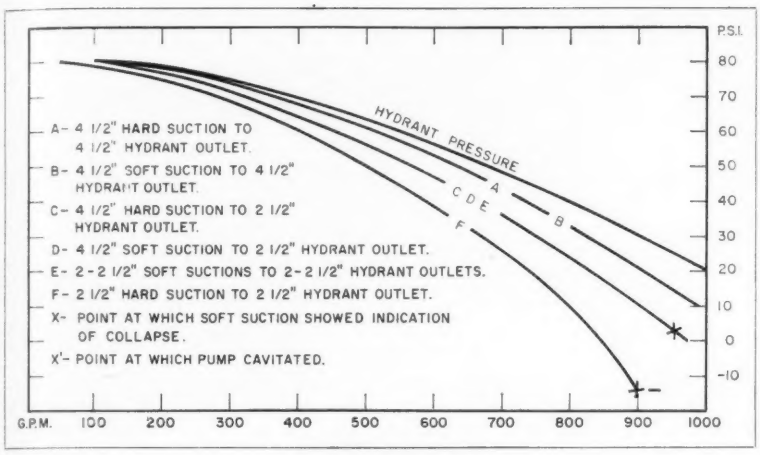
Vernon's fire chief, L. C. Husted, arrived with Hose 1 and soon after the 4-inch hydraulically operated Chiksan gun went into operation. Two pumpers, one Signal Hill and one Long Beach, were used with three lines from the Long Beach unit and one from Signal Hill to supply the device. Chief Husted said the pressure was approximately 180 pounds instead of the 200 normally needed for full efficiency.

Using the fog tip, the Vernon appliance was operated for approximately 40 consecutive hours and was not turned off even to change the tip. Its stream covered an area approximately 200 feet by 200 feet and was credited with keeping a tetraethyl lead processing unit and tank from igniting. Chief Colson believes the appliance was instrumental in saving that entire section of line.

Chief Husted said there was worry for a time that the water from the big gun might flood additional burning oil over

Continued on page 879

Left: Aerial view of Hancock Refinery fire showing efforts to protect exposures. Long Beach Municipal Airport and Air Force Base is shown at rear. **Right:** Vernon Fire Department's Hose Wagon 1 with big hydraulically operated gun protects critical area of refinery fire. Tanks of tetraethyl lead are shown in foreground—*Photos courtesy Los Angeles County F.D.*


P.S.I.
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HYDRANT PRESSURE
A
B
C D E
F
A- 4 1/2" HARD SUCTION TO 4 1/2" HYDRANT OUTLET.
B- 4 1/2" SOFT SUCTION TO 4 1/2" HYDRANT OUTLET.
C- 4 1/2" HARD SUCTION TO 2 1/2" HYDRANT OUTLET.
D- 4 1/2" SOFT SUCTION TO 2 1/2" HYDRANT OUTLET.
E- 2-2 1/2" SOFT SUCTIONS TO 2-2 1/2" HYDRANT OUTLETS.
F- 2 1/2" HARD SUCTION TO 2 1/2" HYDRANT OUTLET.
X- POINT AT WHICH SOFT SUCTION SHOWED INDICATION OF COLLAPSE.
X'- POINT AT WHICH PUMP CAVITATED.
G.P.M. 100 200 300 400 500 600 700 800 900 1000

Results of Test Series No. 1

Comparative Tests of Suction Connections to Hydrants of Limited Capacity

By HENRY T. HANSON

THE ACTON, MASS., FIRE DEPARTMENT, under Chief H. Stuart MacGregor, recently conducted a series of performance tests to determine the relative efficiency of various suction hookups commonly used in operating from hydrants. It is very likely that similar tests have been carried out before, but records of such are not readily available.

These evolutions were performed as a training media in order to give the department members a simple and clear picture of what actually takes place when pumping water from a hydrant. It should be recognized that results of tests such as these may vary considerably with different makes of engines and hydrants.

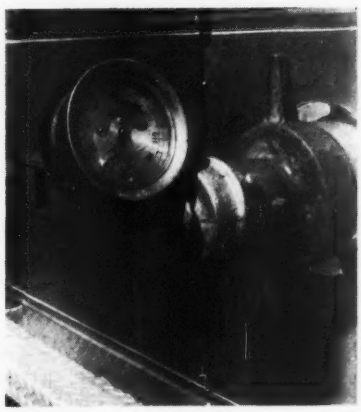
Personnel of the Acton department consists of a full-time chief and three companies of volunteers, with stations in the respective villages of Center, South and West Acton; the three stations are connected with a central alarm system. Major pumping equipment consists of two 750 and three 500-gpm engines.

Water supply is a pumped gravity system with a half-million-gallon standpipe on the highest elevation in town; static pressure is relatively high, ranging from 70 to 115 psi. However, the system contains a large amount of 6-inch pipe, much of this being in long stretches of dead end. Hydrant flows range from a low of 270 gpm at 20 psi residual, with an average of 800 gpm in the residential areas and a maximum of 2,100 gpm in the mercantile district.

The original hydrant installations were of a type having only the two 2½-inch outlets. Later installations have a 4½-inch steamer connection and a program of progressively replacing the older type is being carried out.

Recent years have seen the population of the town nearly doubled due to new housing developments and the addition of a number of new industries. All these changes have placed a demand upon the water system which was never visualized at the time it was originally designed.

Above: Chief H. Stuart MacGregor checks discharge with pitot gage during test
Right: Gage on suction intake gives a more accurate reading than the regular compound gage. A similar gage was attached to one of the hydrant outlets



Test procedure

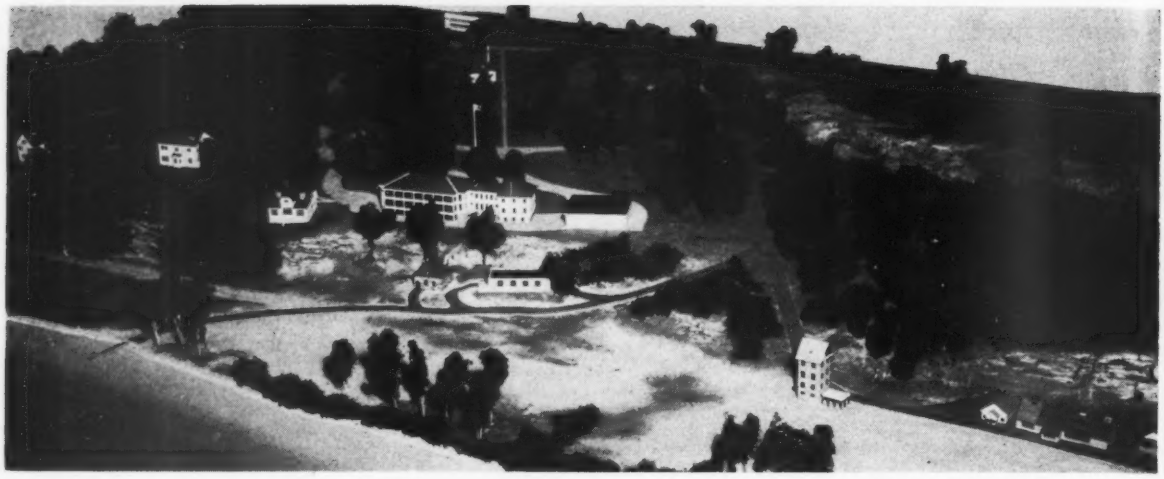
The engine used was a 750-gpm Class A pumper and two hydrants of identical type were selected for the tests. The hydrant used in Test Series 1 had a static pressure of 80 psi and a flow of 1,000 gpm at 20 psi residual; that for Test Series 2 had a static pressure of 90 psi with a flow of but 270 gpm at 20 psi residual. All suction hose was of nominal 10-foot length and hose diameters and connections were as follows: A—4½-inch hard suction to 4½-inch hydrant outlet; B—4½-inch soft suction to 4½-inch hydrant outlet; C—4½-inch hard suction to 2½-inch hydrant outlet; D—4½-inch soft suction to 2½-inch hydrant outlet; E—Two 2½-inch soft suctions to two 2½-inch hydrant outlets; F—2½-inch hard suction to 2½-inch hydrant outlet.

A pressure gage was attached to one of the hydrant outlets during each test; a second gage was attached to the unused suction intake. Both gages were read and noted simultaneously with pitot readings of the discharge, which was through a deluge gun, using a 2-inch tip for the higher flows. This permitted the pump to operate at a low discharge pressure, which allowed it to greatly exceed its rated capacity. The results of Test Series 1 are plotted on the graph.

In Series 1, Tests A and B gave identical results. Tests C, D and E gave substantially the same results. During Test D, the discharge was raised to 950 gpm before the soft suction showed indication of collapse. At this point the hydrant barrel pressure was but 26 psi which seems to indicate that the tapered bore of the 2½ to 4½-inch connection produced a considerable venturi effect, as 32 psi is required to discharge this quantity through an open butt.

In Test F—the straight 2½-inch hard suction—discharge was raised to 900 gpm, at which point cavitation of the pump was indicated. As no accurate means of measuring the vacuum was

Continued on page 880



A scale model of the Ontario Fire College on display at the Ontario Fire Marshal's booth in the Ontario Government Building at the Canadian National Exhibition. The college, the first of its kind in Canada, is located on 92 acres of land just north of the Town of Gravenhurst fronting Lake Muskoka—*Photos courtesy Ontario Fire Marshal's Office*

Ontario Opens First Provincial Fire College

Leslie M. Frost (left) greets R. C. Malmquist, first vice president of the International Association of Fire Chiefs and chief of the Minneapolis Fire Department at opening ceremony. Raul Gandara, chief of the Fire Services of Puerto Rico, and H. M. Smith, Her Majesty's chief inspector for fire services, watch from the background

MANY DISTINGUISHED VISITORS from all points of the compass attended the official opening of the Ontario Fire College in Gravenhurst on August 22. The ceremonies took place in the lecture hall at the fire college with Ontario Fire Marshal W. J. Scott acting as chairman.

Seated on the platform before approximately 350 invited guests were the dignitaries who officiated: The Hon. Leslie M. Frost, Premier of Ontario, the Hon. A. Kelso Roberts, Attorney General for Ontario; Robert Boyer, M.P.P., for Muskoka District; Newfoundland's Fire Commissioner Frank Ryan; Chief Ken Putnam, Kitchener, President of the Canadian Association of Fire Chiefs; Chief Donald Charles, Charlotte, N. C., President of the International Association of Fire Chiefs; Major General George S. Hatton, Federal Deputy Civil Defense Coordinator; Chief Raul Gandara, Insular Fire Services, Puerto Rico; H. M. Smith, C.B.E., Her Majesty's Chief Inspector of Fire Services for Great Britain; and a special guest, the Hon. Leslie Blackwell, former Attorney General for Ontario.

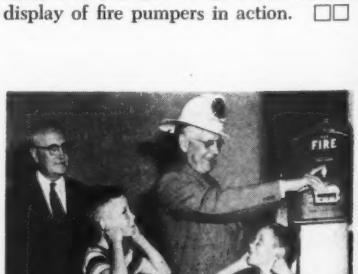
Speaking to the assembly during the ceremonies, Chief Charles praised the Ontario Fire College and called it "a monument to the fire services not only in Canada but in the world as well." Major General Hatton suggested that the fire college could be used by Civil Defense for the six months of the year when the college was not operating. Fire Marshal Scott thanked General Hatton and pointed out that the fire college had "profited tremendously in the pattern of courses from the examples of the Canadian Civil Defense College at Arnprior."

Marshal Scott's dream

Chief Inspector Smith of Great Britain, spoke briefly and emphasized the need for greater knowledge by fire fighters of their profession. Attorney General Roberts cited the fact that the opening of the fire college was "a dream come true" for Fire Marshal Scott who had worked so long and so hard to make it a reality. Mr. Roberts expressed his appreciation for the assistance of some of the United States visitors in proving to him the need of a fire college in his province since he was ultimately responsible for securing the necessary approval of the Ontario Legislature.

Mr. Roberts then called upon the Premier of Ontario, the Hon. Leslie M. Frost, to open the Ontario Fire College. Mr. Frost spoke of the determination of the fire marshal to establish the fire college and commended his leadership. He then declared it officially open with these words: "For the betterment of the lives and property of the people of Ontario, I declare the Ontario Fire College officially open." With a pull on the fire alarm box on the stage of the lecture hall, the Premier set off the bell and siren system which noisily proclaimed the commencement of activities of the first fire college in Canada.

, Visitors were then given a chance to examine the buildings under the guidance of staff members of the Fire Marshal's Office and later were treated to a display of fire pumpers in action. □□



Premier Frost of Ontario pulls the alarm box to signal the official opening of the fire college. Tim and John Barrett, sons of D. E. Barrett, director of the college, hold their ears as the bells and sirens sound. W. J. Scott, Ontario fire marshal, looks on

LP gas-powered truck is fueled from heavily guarded island equipped to handle both liquefied petroleum gas and gasoline

Fire And Damage Safeguards At West Coast LP-Gas Station

IN BUILDING AN LP GAS dispensing station to fuel its milk and ice cream truck fleet in Los Angeles, the Carnation Company complied with the exacting directives of the Los Angeles Fire Department as well as the building department. These safety codes apply to the storage tank, the dispensing station and connecting piping. Carnation operates 250 trucks from this plant, 100 of which are presently equipped for LP gas and other gasoline-fueled units are being converted. Those using the liquefied gas consume about 17,000 gallons monthly.

The liquefied fuel is stored in a 10,000-gallon water capacity vertical tank connected to a dispensing island by underground piping. The Los Angeles Fire Department's LP Gas code requires that any vessel of this nature ". . . in excess of 1,200 gallons capacity shall have a noncombustible foundation approved by the building department. All metal supports, when used, shall be covered with at least 3 inches of concrete, masonry or other approved material of equal durability and fire-resistance."

American Liquid Gas Corp., which designed and installed the equipment, recommended using light-weight 85 per cent Magnesia insulation blocks over the steel skirt of the tank foundation which is designed to resist earthquake shock as well as other hazards. The fire department approved this insulation when applied according to specifications.

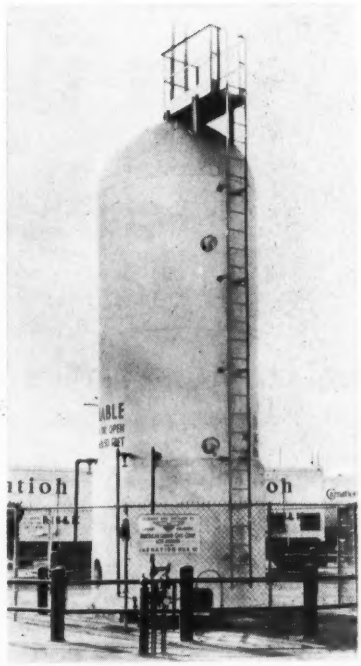
The blocks, 2 x 6 x 36 inches, are applied in a vertical position in three tiers with the bottom tier resting on the base. At 36-inch intervals, metal angles are welded to the steel skirt to provide support for succeeding tiers. The blocks are wired in place and covered with 3.4 psf expanded metal lath fastened over the insulation by tack-welding to the metal angles. The lath is coated with 1 inch of hard-finish cement.

Two magnetic gauges, calibrated in feet of fluid, permit gauging of the tank by direct reading of the dials. A 6-foot high chain link fence and heavy steel guard rails on concrete based posts surround the tank to prevent damage by vehicles.

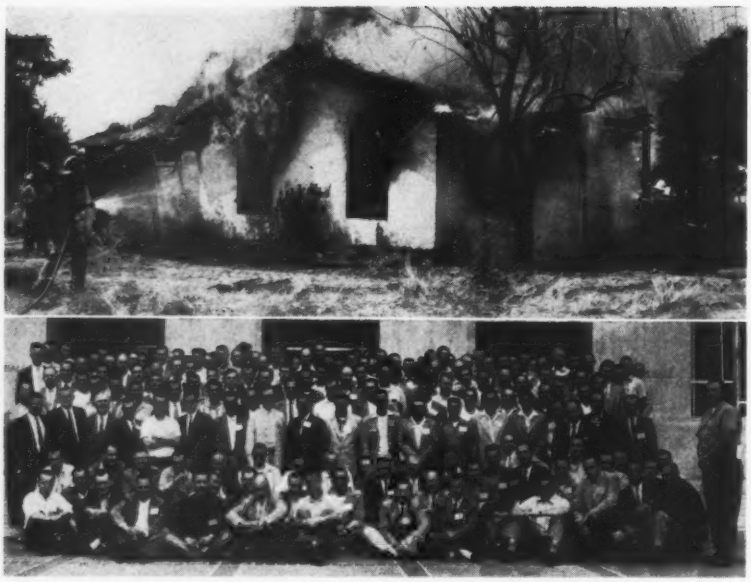
Underground piping from the tank to the dispensing island is wrapped and coated according to city regulations.

The LP gas is transferred by a special pump from the tank to the meter on the island. A switch at the meter is used for normal operation and another emergency switch is located near the pump.

The dispensing station is equipped to handle both LP gas and gasoline. The LP gas dispensing meter is equipped with a spring operated shut-off valve, located below the top level of the concrete island, which can be closed by a trip lever and a 200°F. fusible link. Any damage to the meter or meter stand activates the lever and closes the valve avoiding loss of fuel from the pipe lines. □□



Ten thousand-gallon LP gas tank at Carnation Company plant is designed to resist earthquake shock or fire. Eighty-five per cent Magnesia insulation blocks protect steel and concrete base from fire damage



Above: Workshop participants, employing fog, move in to extinguish fire in test building. Twenty-nine fires of all types were set at Highway City training area in order to demonstrate most effective methods of control

Below: Group photo of student body, Fifth Annual Arson and Fire Investigation Seminar, held at University of California, Berkeley

California Holds Fire Training Conferences

Two noteworthy training conferences were held in recent months under the sponsorship of the Bureau of Industrial Education of the California State Department of Education.

One hundred and fifty-seven training officers from municipal, industrial, county and military fire departments and the California Division of Forestry participated in the Fifth Annual Fire Training Officers' Workshop held in Fresno, May 19-23, as a cooperative venture of the Fresno Fire Department, Chief Gayle V. Coger, and the California Fire Training Program, Thomas S. Ward, supervisor. All classroom sessions were held at the host department's training center and covered basic and advanced instructor training and organization for instruction; the latter is a continuing subject and considered the backbone of the workshop. A feature was the fire extinguishment classes held in Highway City. Twenty-nine fires were set and extinguished in buildings purchased or donated for the occasion, and in sumps, automobiles and wild lands, by the use of high and low pressure water fog, straight streams, carbon dioxide and dry chemical.

Two hundred and six arson investigators, fire marshals, police inspectors and investigators, fire department officers and personnel from six states attended the Fifth Annual Arson and Fire Investigation Seminar at the University of California, Berkeley, June 16-20. The theme for this year's seminar was set by Richard C. Steinmetz, chief special agent, Mutual Investigation Bureau, Chicago, Ill., with the topic "Contemporary Arson Problems."

Night Club Destroyed by $100,000 Blaze

The Embers night club in Washington Township, Ohio, lived up to its name, August 13 last—and became embers. Fire completely destroyed the nighterie shortly after 4:00 a.m.

The Trilby, Ohio, Fire Department was notified by the Washington Township dispatcher at 4:22 a.m., following receipt of a telephone alarm from a motorist who discovered the blaze. The volunteers under Chief Elden LaFollette responded promptly, but the structure was so fully involved they were unable for some time to approach near enough to get water on the fire.

The cause of the blaze was undetermined. Chief LaFollette said there had been six other fires at the club in the last two years—three of them of suspicious origin—all of them apparently starting in the kitchen. According to the chief, the latest, and final blaze, however, appeared not to have originated in that part of the structure.

The Embers fire is the second in the area to cause extensive damage to a night club within a year. On New Year's Day, fire swept the Tivoli Restaurant, causing damage estimated at $80,000 to $100,000. This fire occurred at about the same time as the Embers flare-up and caused injuries to four Trilby fire fighters. Two firemen were injured while fighting the Embers fire, neither seriously.

The Trilby station of the Washington Township Fire Department used three pumpers and one rescue squad in the Embers' action. Arson investigators from the Ohio State Fire Marshal's Office are investigating. *Ashley Gunn*

July Fire Losses

Estimated fire losses in the United States during July amounted to $80,782,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $80,782,000 loss represents an increase of 3.8 per cent over losses of $77,814,000 reported for July 1957, and a decrease of 10.3 per cent from losses of $90,048,000 for last June (1958).

Losses for the first seven months of 1958 now total $662,017,000, an increase of 5.4 per cent over the first seven months of 1957, when they amounted to $627,969,000.

These estimated losses include an allowance for uninsured and unreported losses.

Last Alarm for Smokey

A familiar sight to residents of Norwalk, Conn., and especially beloved by the members of the fire department in that city answered his last alarm on July 4.

"Smokey," a Dalmatian mascot, who had been racing to fires with the apparatus at central fire station for the past 16 years, was "put away" on the advice of a veterinarian, who said the animal was suffering from the infirmities of old age and never would be well again.

"We hated to see Smokey go," said Chief Charles A. Volk, as the Dalmatian was taken to Dogdom. "He seemed almost human at times. When this telephone would ring or a street box started to come in to headquarters, Smokey would perk up his spotted ears as if to scent danger ahead or that someone needed us. *Tom Magner*

What's the difference between EUREKA Multiple-Woven and plain "circular-woven"?

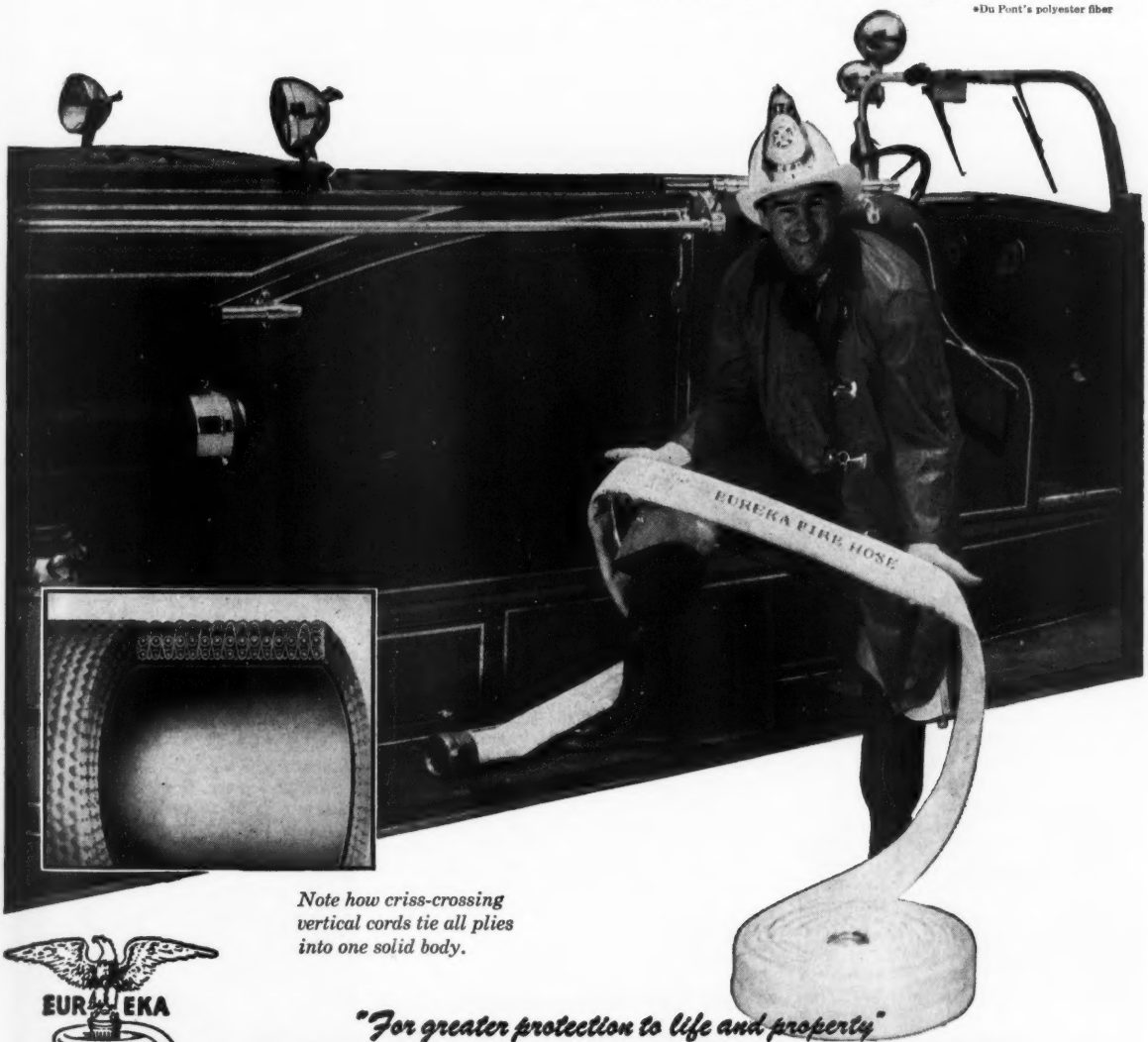
Most fire hose is "circular-woven", one ply at a time. Only Eureka furnishes *multiple-woven* hose.

Want to see the difference? Look at the cross-section of a Eureka multiple-woven hose. Notice those cords running up and down through the plies! You'll find them only in *multiple-woven* hose. The unique Eureka loom not only weaves all plies simultaneously but also weaves through them these additional warp threads that bind together the filler cords of *all* plies into a single homogeneous jacket. Result:

- Greater strength from the same weight of materials,
- No space between plies to collect dirt and moisture,
- Longer, safer service life,
- No writhing under hydrostatic pressure.

Built to withstand pressures of either 400 or 600 pounds, Eureka Multiple-Woven Hose—with filler (circular) cords of cotton or Dacron*—can be furnished in all standard diameters. Your Eureka representative will gladly give you all details. Remember, he is a fire hose specialist!

*Du Pont's polyester fiber



Note how criss-crossing vertical cords tie all plies into one solid body.

"For greater protection to life and property"

EUREKA FIRE HOSE

Since 1875, Specialists in Manufacturing Circular-Woven Rubber-Lined Fire Hose

1 Market Street • Passaic, New Jersey

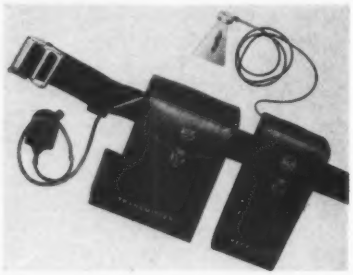
Division of United States Rubber

WHAT'S NEW

Among the Manufacturers

- products
- processes
- personalities

New RCA Belt Radio



Radio Corporation of America, Camden, N. J., has introduced its "Personalfone" two-way radio which may be carried by firemen strapped to their belts. The transistorized miniature lightweight units are self-contained and said to have power and range equal to most walkie-talkies.

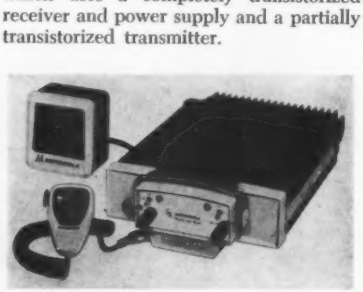
Federal Electronic Siren

Federal Sign and Signal Corp., 8700 South State Street, Chicago 19, Ill., has announced the "Interceptor," an electronic siren which will also function as a radio amplifier or public address system.

It is said to be equipped with a 7½-inch weatherproof speaker and a 30-watt fully transistorized amplifier. Either unit may be mounted in a convenient location.

Motorola Introduces "Motrac"

Motorola Communications and Industrial Electronics Division, 4501 West Augusta Boulevard, Chicago 51, Ill., announces a new two-way radiophone which uses a completely transistorized receiver and power supply and a partially transistorized transmitter.



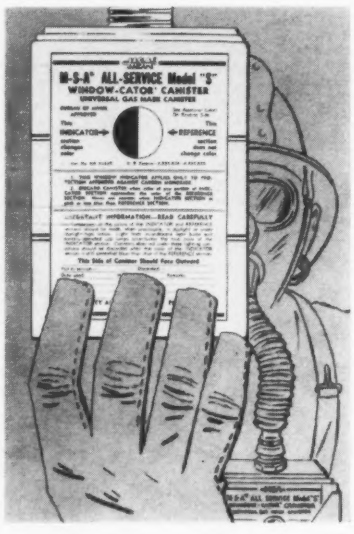
Named "Motrac," it is about one-half the size of previous mobile units and is said to draw 1.82 amps during stand-by. Either 30 or 50 watts output is available in the 25-54 mc band and 25 watts in the 147-174 mc band. Receiver audio output is stated to be 5 watts.

New Standpipe Hose

A rubber-lined fire hose called "Rack-N-Reel" has been developed by Hewitt-Robins, Inc., 666 Glenbrook Rd., Stamford, Conn., for use with standpipe fire protection equipment. The new hose has a jacket of dacron-cotton and a tube of neoprene rubber. It weighs 9 pounds per 50-foot length.

In addition to claimed advantages of greater strength and lighter weight, it is said to have greater flexibility, making it easier to handle. "Weeping," usually associated with linen hose is eliminated. It is available in maximum lengths of 100 feet, 1½-inch diameter.

New MSA Mask Canister



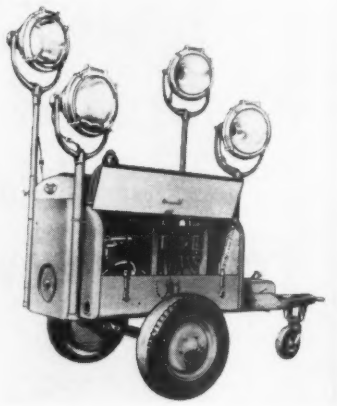
Mine Safety Appliances Company, 201 North Braddock Avenue, Pittsburgh 8, Pa., announces its new "Windowcator" canister for MSA Model S gas masks. The canister employs the new color indicator for carbon monoxide which has been adopted by the Industrial Safety Equipment Association, Inc. and approved by the Bureau of Mines. Conversion kits for use with older type masks are available.

New Traffic Safety Cones

Sentinel Manufacturing Company, 23 East 20th Street, New York 3, N. Y., has developed a new polyethylene plastic safety cone for use at highway fires, accidents, etc. The bright yellow markers are said to be lightweight, inexpensive and visible day or night.

Trailer Light Plant

Pacific Mercury, 14052 Burbank Blvd., Van Nuys, Calif., has introduced a trailerized lighting unit designed to meet emergency needs of nighttime fire fighting that generates its own electric power.



Named the 'Mobilite,' it is available with 320,000 or 480,000 candlepower. The four floodlights adjust to a maximum 18-foot extension and pivot in a complete circle.

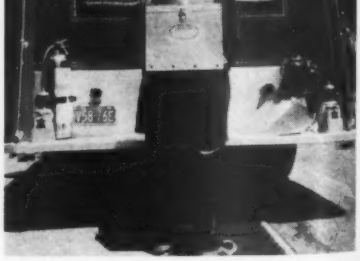
Hercules Producing Hall-Scott Engines at Canton, Ohio

Hercules Motor Corporation has begun producing Hall-Scott engines at its Canton, Ohio, plant, 101 - 11th Street. Hercules acquired the Engine Division of Hall-Scott on June 2 and the first engine came off the new assembly line on July 24.

The move from Berkeley, Calif., to Canton, involving over two million pounds of tools, equipment and parts in 74 truckloads and three railroad cars, was completed in 30 working days. It is expected volume production will be reached by September.

Cutting Unit and Inhalator

The "Savalife Kit," a portable acetylene cutting outfit and first aid inhalator is available from Gas Arc Supply, 223 North 16th Street, Philadelphia 2, Pa., for use by fire and police departments, civil defense units, rescue squads and safety de-



Get 5 gallons of UNOX® FREE

Order These Three:

- ★ Any IMPERIAL NOZZLE
- ★ Any AKRON EDUCTOR
- ★ 5 gallons of UNOX®

Get 5 gallons of UNOX® FREE!

for limited time only

UNOX® FOAM

Foams in any water, improves the efficiency of any water as an extinguisher for class "A" or "B" fires. Less water needed because 1,000 gallons of water with UNOX® makes 10,000 gallons of foam. Non toxic, insulating, penetrates as "wetter water" as it breaks down. Underwriters' Laboratories tested and approved.

EDUCTORS

All eductors have a large easy-to-see calibrated metering valve. Built in by-pass eductor valve allows instant change from foam to water without pressure loss. Both in-line and by-pass eductors are built to Akron quality for severe fire service.

IMPERIAL NOZZLE

Finest hand line nozzle ever developed. *Dual gallonage* from 1 nozzle—a twist of the baffle gives choice of 2 gallonages. *Constant gallonage* in all stream patterns at *every* setting at both water rates. Small, compact, easy to handle—all of the versatility of two nozzles on the end of your line without shutting down. Water lubricated, never needs grease. Produces foam in all stream patterns.

Akron Eductors (Proportioners) and Imperial Nozzles are engineered to match. When used with UNOX® Penetrant Foam Liquid , foam, wet water or fog can be produced in all degrees of stream patterns—without changing nozzles or shutting down. Ask for FREE "Modernize with Foam" catalog for complete data.

Akron Brass Mfg. Company, Inc., Wooster, Ohio

AKRON BRASS
FIRE FIGHTING EQUIPMENT

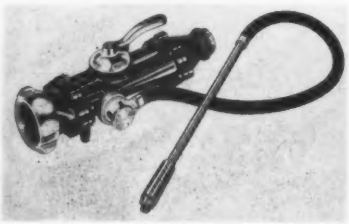
partments of industrial plants. The unit is housed in an aluminum case, 26⅛ inches high by 15¼ inches wide by 7¼ inches deep, and weighs 46 pounds.

Sufficient gases are provided to cut up to 1½ inches of steel for two hours and a reserve acetylene cylinder is enclosed in the case. The oxygen cylinder delivers up to 6 liters for inhalator use. A drawer in the top part of the case holds goggles, gloves, spark lighter, wrench, spare tip, inhalator and instruction book. The unit is equipped with 10 feet of dual hose. The kit meets and exceeds Civil Defense Specifications M-6 Item CD VIII-66.

Norseman Power Plant

Norseman Marine, 172 Nevada Street, Oshkosh, Wis., has announced addition of a new 15-kw diesel power and light plant to its line. Driven by a four-cylinder engine, they are available in voltages of 110, 120/240, 240, and 120/208, 60-cycle A.C., and voltages and frequencies to meet local requirements.

Akron By-Pass Eductor



The Akron Brass Mfg. Co., Inc., Wooster, Ohio, has announced its "By-Pass" eductor, an in-line device which permits instant selection of water or air foam by means of a single lever. The eductor may be connected to a pump discharge gate and is then ready for use without shutting down or changing equipment.

New Gamewell Stock Ownership

William L. Less, a partner in the financial firm of D. H. Ellis & Co., New York, has acquired a 30 per cent stock interest in The Gamewell Company, Newton Upper Falls, Mass., from the Roger W. Babson interests. Mr. Less, who has had close association with Mr. Babson for many years, is also a director and member of the executive committee, Columbian National Life Insurance Co., and director and member of the operating committee, United Stores Corp.; and president of Soundscriber Co.

The only changes as the result of the stock purchase are the replacement of three representatives of the former interests on the board of directors and an increase of the board by addition of Einar W. Sundberg, vice president and treasurer of The Gamewell Company.

Roger W. Babson, D. G. Hollister and W. L. Webber will be succeeded by Mr. Less; Stanley Hope, who recently retired as president, Esso Standard Oil Co.; and Clyde E. Williams, former president of the Battelle Memorial Institute, Columbus, Ohio, now a private research consultant and director of Howe Sound Co.

William J. Carroll, president of the Rockwood Sprinkler Co., will remain as chairman of the board; Leonard Spangenberg, president of United Stores Corp. and vice president, Business Statistics Organization, Inc., will remain as vice chairman. Grenfell A. Swim, president and general manager, The Gamewell Company, continues as a member.

In a statement to FIRE ENGINEERING, Mr. Swim said: "Sales of stock take place practically every day. This would be nothing more than a routine transfer of stock except for the fact that it represents a substantial block. We expect to benefit greatly from the wide experience the new directors will bring to management problems. The organization and policies of the company remain unchanged. Our customers are assured of continuing good service and the highest quality products at fair prices."

More Macks for NYFD

Sale of 33 more pieces of fire apparatus to the New York Fire Department has been announced by Mack Trucks, Plainfield, N. J.

The order includes thirten 1,000-gpm pumpers, seven 750-gpm pumpers and thirteen 85-foot tractor-trailer aerial ladders. Total cost is approximately $800,000.

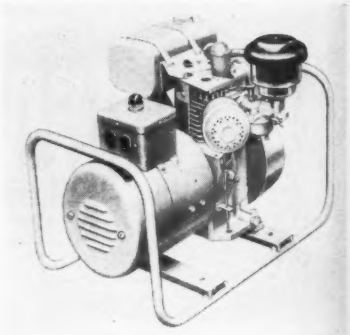
This brings to 112 the total units of Mack equipment sold to the New York Fire Department within the past two years.

G-E Narrow Band Kits

Conversion kits are now available from General Electric Company to make the transition from wide-to-narrow band FM radio which will take place gradually in the next five years. However, the company cautioned that the FCC still has Docket 12295 pending on the subject of implementing the rules and *licensees may want to wait until rules are finalized before making conversions.*

The new kits are offered by General Electric's Communication Products Department, Electronics Park, Syracuse.

New Pioneer Generators

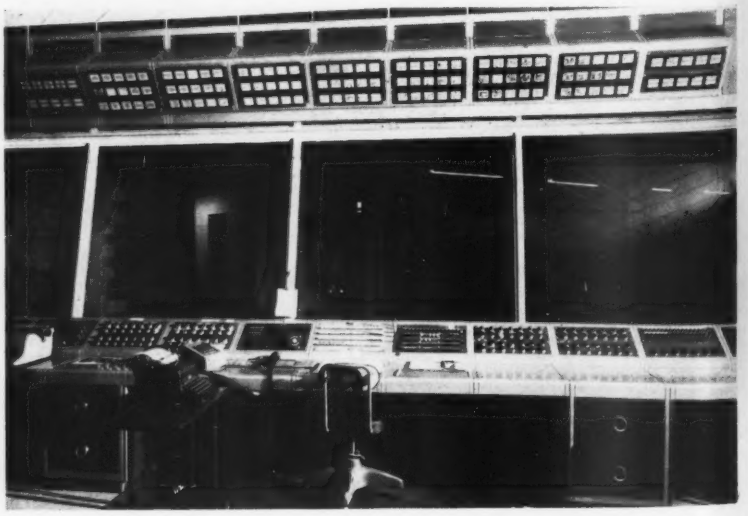


The Pioneer Gen-E-Motor Corporation, 5841 West Dickens Avenue, Chicago 39, Ill., has announced two new units in its line of portable electric generating plants. The 1,000-watt and 1,500-watt models feature recoil rope starting and a sturdy carrying frame. They weigh 72 pounds and 109 pounds respectively.

Minnesota Shopping Center Employs Electronic Alarm System

Around-the-clock protection against fire, burglary and machinery failure is afforded Minneapolis' "Southdale" Regional Shopping Center by a detection network designed and constructed by the Scam Instrument Corporation, 1811 West Irving Park Road, Chicago 13, Ill. The central protection office supervises 75 stores in the 670,000-square-foot area and has detected more than 20 fires since its original installation.

Continued on page 881



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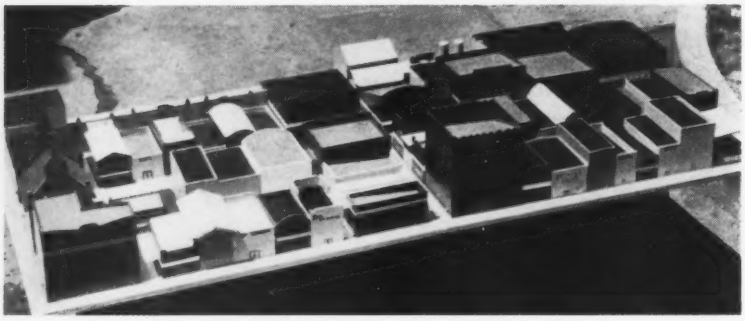
short cuts and gadgets



Scale Model for Pre-attack Planning Classes

One of the highlights of the 1958 Kentucky Fire Instructors Conference was a class in pre-attack planning taught by Assistant Chief Omer Cunningham of the Lexington, Ky., Fire Department, with Captain Harry Wolff, Western Actuarial Bureau, Chicago, Ill., acting as class advisor.

Chief Cunningham and Captain Wolff, when planning the class, came up with the idea of building a scale model of a business section of an average community to be used in illustrating the fire control techniques covered in the subject.

The model board was constructed by Captain Otis W. Christian, assisted by Fireman Darrel Snapp, both of Lexington, and consists of four city blocks complete with factories, office buildings, theater, church, lumber yard, bulk oil storage plant, small business buildings, dwellings, etc. It is built on a scale of 1 inch to 10 feet. A color code designates the type of construction and roof, with red for brick veneer, yellow for frame and white for concrete block or stone. Miniature pumpers, aerial ladders and cars are used for showing placement during tactics discussion. Many different situations may be illustrated and methods to overcome various problems outlined.

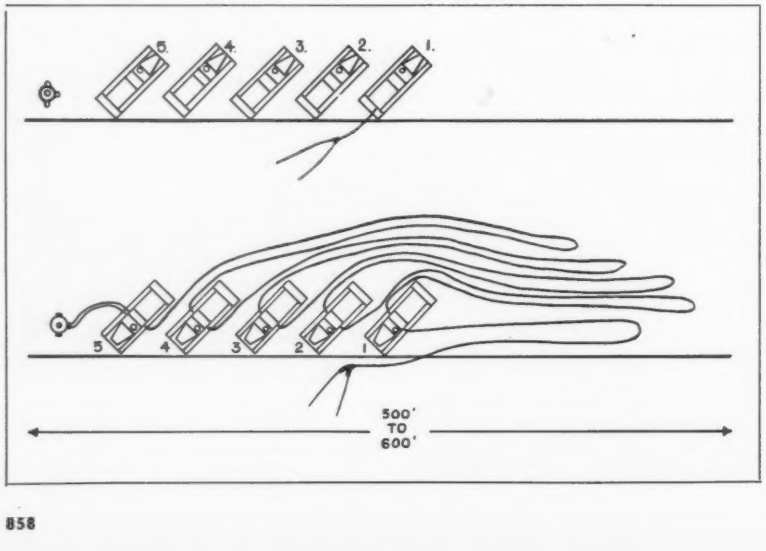
The success of the model board in teaching the state instructors class was very gratifying. Its use added a great amount of interest and encouraged students to enter into the discussions.

Setting up Practice Relays in Short Spaces

Chief Anthony S. Gannone, Bound Brook, N. J., Fire Department suggests a method for practice relays which he has found useful. The arrangement of apparatus and hose permits an operation of a mile or more within a space of 500-600 feet and enables the instructor and the students to easily view the results of their efforts.

Chief Gannone's instructions follow:

1. Pick out a dead-end street, large parking lot or park with a water supply. It is not necessary to tie up a mile of street or road.



2. Place the apparatus numbered as shown in Figure 1 (top). It is assumed that each pumper carries about 1,000 feet of 2½-inch hose.

3. Pumper 1 pulls out four 50-foot lengths if a wye hook-up with two ¾-inch tips is desired or two lengths, if a single line is to be used with a 1-inch tip.

4. Pumper 1 proceeds to right as shown on the sketch and stretches approximately 400 feet; makes a U-turn left; then returns to its respective position facing in opposite direction as shown in Figure 2 (bottom).

5. Pumper 2 hooks up to suction connection of Pumper 1 and proceeds to right; after stretching approximately 450 feet of hose, a U-turn is made and it returns to its original position as shown.

6. Remaining pumpers proceed in same manner as Pumper 2. When Pumper 5 returns to position it then hooks up to supply the layout.

Public Relations Note

Following each fire in Salisbury, N. C., Chief Charles L. Burkett of the Salisbury Fire Department sends a polite note to the owner or occupant of the property involved. Its value in promoting good fire department public relations is readily apparent.

The outside fold of the simple note carries the seal of the city and the words "In Appreciation." Inside is this message signed by the chief:

"Your fire department renders a vital service by protecting life and property. It makes low insurance rates possible by maintaining a high standard in efficiency and promptness. A part of your city tax dollar finances its operation.

"Recently the fire department responded to an alarm of fire whereby your property was involved. We appreciate that we were called to render our services although it was our duty. . . .

"We appreciate the fact that we were able to exert the ability of a trained personnel designed to assist our citizens when needed. . . ."

Fontana Radio Code

Chief William J. Janka, Fontana, Calif., Fire Department has adopted a radio code for use in reporting conditions at a fire as the officer in charge arrives at the scene. This brief appraisal is helpful to other units responding and to headquarters personnel.

Condition "A" or "Able"—A small fire which first unit can handle. Other units responding may return to quarters.

Condition "B" or "Baker"—A working fire. Will probably use all units responding. No further help is anticipated.

Condition "C" or "Charlie"—Major fire. Additional help may be required. Stand-by for instructions (or request whatever assistance is needed).

Chief Janka reports that he has found it very useful and that neighboring departments are now using or considering its use. □□

KNOCK OUT FIRES FAST...

With Reflective-Protective Equipment that Shields You from Radiant Heat

What you do in the first five minutes of fire fighting is more important than the next five hours! You've got to act fast . . . get the water, or chemical, *in where it works* . . . you can't do it *effectively* unless you're up really close! And it's hot up close—unbearable unless you're shielded from the radiant heat. You can move in with conventional gear, but the heat soon soaks through—and how about your face? If you turn your head you can't see . . . you're *wasting* precious seconds!

There's a safe, simple solution to the whole problem of moving in—and *staying there* till the job is done. It's in the heat protective-reflective qualities of long-wearing 3M Brand Aluminized Fabric. Equipped with a hood, gloves and coat made from 3M Aluminized Fabric you can work in as *close as needed*—see what you're doing, too. This amazing material is light weight and extremely flexible. It *reflects* 90% of radiant heat—doesn't absorb it—there's no need for heavy, bulky insulation that's restrictive to movement . . . efficiency!

Every second you spend at a fire is tough, dangerous work. You can shorten fires' duration—add to your safety and comfort with equipment made of 3M Aluminized Fabric—it's the material specified for United States Air Force crash crews—proof of quality-performance.

Send the coupon for a free sample you can test . . . and for the informative, interesting booklet, "When It Takes More Than Courage."

3M BRAND **ALUMINIZED FABRIC**

Minnesota Mining and Manufacturing Company
. . . WHERE RESEARCH IS THE KEY TO TOMORROW
St. Paul 6, Minn.

"3M" is a registered trademark of Minnesota Mining and Manufacturing Company, St. Paul 6, Minn.
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Minnesota Mining and Manufacturing Co., Bldg. 42-5W, Room 514 B, St. Paul 6, Minnesota

Please send me booklet, "When It Takes More Than Courage".

Name_____ Title_____

Firm or Fire Dept._____

Address_____

City_____ Zone____ State_____

FALSE ALARMS

Back in the Tennessee hills two neighboring volunteers were arguing over the death of a cow. It seems the cow had strayed near the still belonging to one of them, and subsequently died after drinking a considerable quantity of discarded still squeezings.

"It wasn't my liquor that killed your cow," said one vamp, "she came home to you giving eggnog and you milked her to death!"

An old Indian brought his watch in to be repaired. When the jeweler took the back off, a dead bug fell out.

The Indian, astonished, exclaimed: "Ugh . . . No wonder watch stopped . . . engineer dead!"

The fireman of an emergency squad attending a woman whose arm had been severely bitten mused, "I can't imagine what sort of a creature bit you. This bite is too large for a dog and too small for a horse."

"Oh," exclaimed the victim, "it wasn't an animal at all; it was another lady!"

Weeping and Wailing—No Gnashing

Two fire chief friends were fishing together and one put his false teeth in his pocket. During a restful moment his sly companion slipped the teeth out of the pocket and substituted his own.

Time passed, the first chief decided to restore his dental plates and plunked the strange teeth in his mouth.

He chomped uncomfortably a moment, then to the horror of his audience, took them out of his mouth, announced that "these things never did fit anyway" and hurled them into the lake.

Sign posted at the city limits of Toledo, Ill., recently read: "Welcome to Toledo—Population 1,000—989 Happy Souls, 11 Soreheads."

Awed by his secretary's new diamond ring, the boss asked for the particuars.

"Oh," she said, "When Grandma died, she left $1,000 for a stone in her memory. This is it."

"So help me, Chief, I could've swore it was just another load of wet sawdust!"

The local fire brigade of Franken, Germany, faced with the urgent need for funds for new equipment, passed circulars among the villagers which read: "If not enough money can be collected for the new hose, we may find ourselves forced to stage a concert!" They got their money.

Foolosophy

It's better to have a husband who comes in handy around the house than one who comes in unexpectedly!

Kinkchaser got a big check for services rendered on an off-time job, then discovered it was one cent short. Insisting that the penny be made up, he finally received another check for one cent.

Presenting it at the bank, the teller looked at it and said, "How would you like this sir?—Heads or tails?"

On his day off, the Old Timer had really tied one on. There he stood, literally out on his feet, holding on to the lamp pole for dear life.

"Why don't you take a street car home, my good man?" said a passer-by.

"Shnow ushe," mumbled the Old Timer sadly, "my wife wouldn't let me keep it in the houshe."

He was seated in the parlor, and he said unto the light—"Either you or I, old fellow, will be turned down tonight."

"See here, young feller," said the old justice of the peace, "I want you to know yer can't commit perjury in this here court."

"But I didn't lie to you, sir," said the defendant.

"Yer did too," cried the old JP. "You just this minute told me ya only had one brother, and yer sister here claims she's got two!"

A man of 6 feet, 10 inches applied for a job as a lifeguard.

"Can you swim?" asked the beach manager.

"Naw," said the big fellow, "but I can wade like hell."

Fireman Kinkchaser (in search of citations): "Sir, I have just resuscitated your daughter."

Father: "Then by God you've gotta marry her!"

They laughed when I sat down at the piano, but when the little redhead soprano gave me the key to A flat, boy how I accompanied her.

Speaking of a new recruit, the captain said, "He'll make a model fireman—but not a working model."

for lighter weight and GREATER STRENGTH

SPECIFY

REPUBLIC'S DACRON FILLER

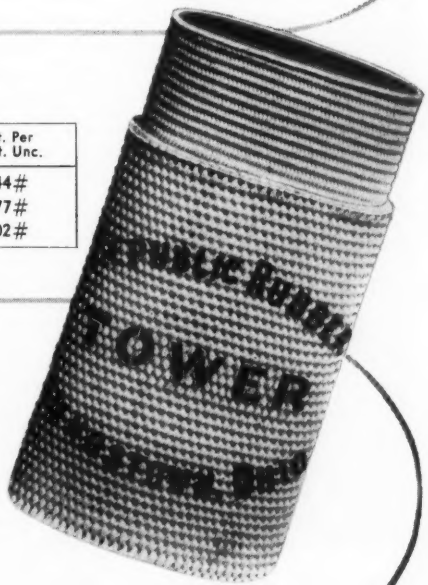
MUNICIPAL FIRE HOSE

Champion 600# Test Pressure

Size	O.D.	Test Pressure	Wt. Per C Ft. Unc.
1½"	2 "	600#	45#
2½"	3 1/16"	600#	79#
3 "	3 5/8"	600#	107#

Tower 400# Test Pressure

Size	O.D.	Test Pressure	Wt. Per C Ft. Unc.
1½"	1 31/32"	400#	44#
2½"	3 3/16"	400#	77#
3 "	3 13/32"	400#	102#



In addition to these Dacron Filler types, Republic makes two Cotton Filler, Double Jacket types: K-122 Chariot and K-127 Target, both for 400# Test Pressure.

Republic Municipal Fire Hose is Provar Processed as standard construction for mildew prevention and is flat-cured, permitting easy handling and storage of more footage. Send us your order or request for quotation.

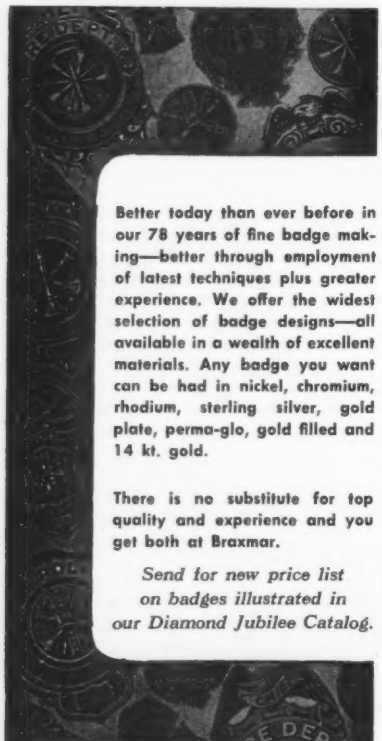
"Quality Hose Builders for Over 50 Years"

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

BRAXMAR BADGES



Better today than ever before in our 78 years of fine badge making—better through employment of latest techniques plus greater experience. We offer the widest selection of badge designs—all available in a wealth of excellent materials. Any badge you want can be had in nickel, chromium, rhodium, sterling silver, gold plate, perma-glo, gold filled and 14 kt. gold.

There is no substitute for top quality and experience and you get both at Braxmar.

Send for new price list on badges illustrated in our Diamond Jubilee Catalog.

THE C. G. BRAXMAR CO., INC.
Dept. FE
216 East 45th Street
New York 17, N. Y.

the round table

discussion of current fire department and fire management problems

The Use Of Portable Radios

THIS IS THE FINAL installment of the Round Table on the use of portable radio equipment.

The generous response from our readers makes it necessary to carry the discussion over to the September issue. The editors will welcome any additional comments on the subject. Address replies to Round Table Editor, FIRE ENGINEERING, 305 East 45th Street, New York 17, N. Y.

The Discussion

Ray Miller, Chief, Peoria, Ill.: We have 22 two-way radios mounted on fire equipment and six walkie-talkies.

We have our own frequency but share it with our engineering and electrical department.

These radios are assigned to the captains of apparatus and chiefs in case of an emergency.

We have 13 sets on fire apparatus and four on reserve apparatus. One mounted radio and two walkie-talkies in the inhalator truck and a radio and walkie-talkie in the chiefs' cars.

These units are used in emergencies and in training. They serve well and are a very useful addition to our department.

John P. Barry, Chief, Saint Paul, Minn.: We carry five portable radio units which operate on our own frequency.

They are assigned to the chiefs' drivers and carried on the district chief's car.

The units are used for emergency operations only.

Raye E. Power, Chief, Frankfort, Ind.: We have no portable radio units but have used them from the National Guard on one occasion.

Allie A. Feldman, Chief, Denver, Colo.: We have nine walkie-talkies, which operate on our own wave length.

These units are permanently assigned to five district chiefs, the master mechanic, the superintendent of fire alarm, the chief of the department and the deputy chief and carried on their cars.

They are used in all emergencies; fire, floods, etc., also at civil defense exercises.

R. G. Harry, Chief, St. Cloud, Minn.: We have two portable radio units, which operate on our own fire department frequency.

One unit is always assigned to the chief and used by him at fires. The other is used by the officer covering the rear of the fire building or on roofs, etc.

They are carried on the chief's car and on Pumper 1.

We use them in life boats when dragging for bodies, in-service inspection work, etc.

Michael H. Lotz, Chief, Baltimore, Md.: Eleven handy-talkies are carried in our department.

We operate on a state-wide fire service frequency for walkie-talkies, which is a different frequency from that of the Baltimore City Fire Department.

The units are assigned by the deputy chief on the scene.

One is carried on the chief's car and one on each deputy's car. We use two at the fire school for instruction purposes.

The units are also used for civil defense drills and to maintain communications with fire companies from other communities.

Gerald H. Lenhard, Deputy Fire Co-Ordinator, Genesee County Mutual Aid, Corfu, N. Y.: We have two transistorized portable radio units at the present time.

These units operate on the Genesee County mutual aid fire frequency of 46.10 mcs. with an output of 8 watts, a power sufficient to reach fire control from any point in the county.

The units were purchased by Genesee County at the request of the Mutual Aid Fire Advisory Board nearly two years ago and are under the control of Donald McKay, county co-ordinator. The units are readily available from Fire Control Center, Fire Headquarters, Batavia, N. Y.

The primary use of these units is for emergencies in the fire service and will be dispatched to the scene of any emergency in the county at the request of the fire chief. One unit is assigned to the fire

THIS MONTH'S QUESTIONS

How many portable radio units (walkie-talkies, pack sets, etc.) do you carry?

Do these units operate on a fire department frequency or do you share a frequency with another service?

To whom are these units assigned at the scene of an emergency?

On what fire department vehicles are the units carried?

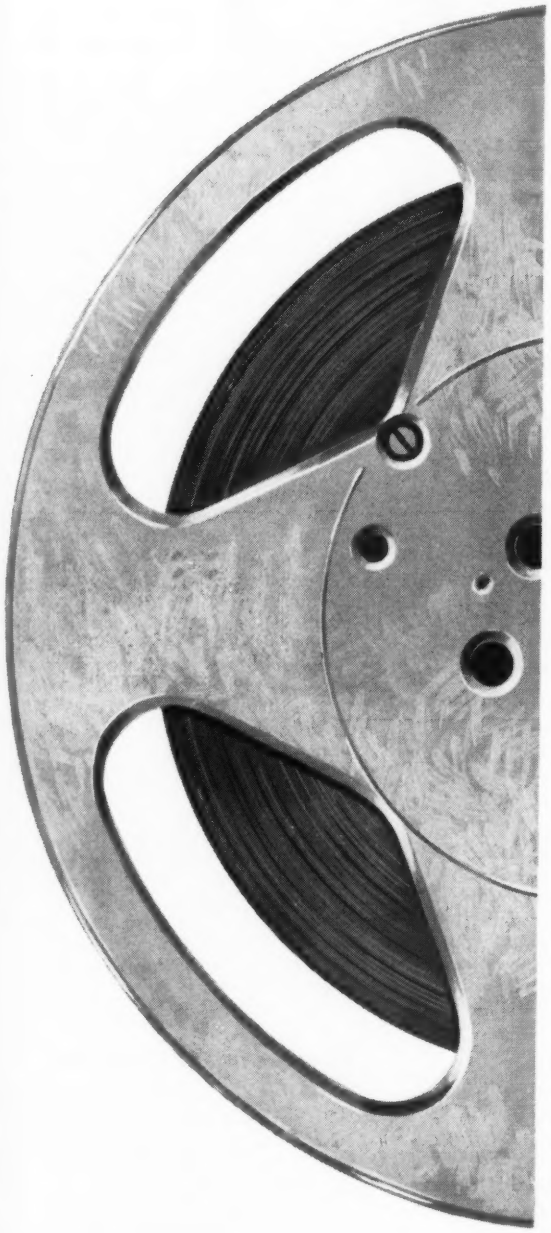
Do you use the units in other than emergency operations? If so, please explain.

The BIG WHEEL in industrial recording

The company that has worked the longest time in industrial recording is the Dictaphone Corporation.

The company that does the biggest business in industrial recording is the Dictaphone Corporation.

The sum total: *experience* that can be invaluable to any organization in a position to profit from recording equipment. Your organization, perhaps?



Here are the machines we make:

DICTATAPE—a big, 5-channel magnetic tape memory that provides checkable and re-checkable logging of communications—without attendants—for large airports, highway commissions, utility operators, railroads, and other major installations.

DICTALOG—a large-capacity magnetic belt memory that provides positive logging service for medium-size installations of the same type as those above; and for major municipal fire and police headquarters.

DICTACORD—a smaller logging unit made to monitor and record radio, telephone, and PA system communications in average-sized fire and police stations; and also in business offices.

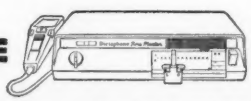
AIMO (Audibly Instructed Manufacturing Operations)—an exciting new tape development that automatically transmits step-by-step oral instructions to new production line workers in manufacturing operations—eliminating time-taking reference to drawings or written instruction sheets. Uses for this machine are well-nigh limitless.

DICTACHRON—a time-announcing machine that attaches to any of the above instruments and automatically provides continuous time-checks which are recorded.

* * *

Industrial recording is a field so new, so useful, so boundless that new applications are being discovered for it constantly. There's a good chance some of those applications exist in your business.

Would you like to get more information? Call your local Dictaphone office. The call will cost you pennies. It could save you tens of thousands of dollars.

DICTAPHONE  **CORPORATION**

Dictatape, Dictalog, Dictacord and Dictachron are trademarks of Dictaphone Corporation.

Get smoke out, get air in

with Multi-Purpose

SUPER VAC

CONTROLLED VENTILATION UNITS

NOT JUST A FAN... but a powerful vacuum-action air screw... Super Vac is amazingly simple in operation, made possible by the efficient design of the **powerful propeller** that is the heart of the unit. This patented propeller produces 100% pulling or blowing power over its entire surface.

Proved method of saving lives while also reducing smoke damage

Fire departments **nation-wide** attest to the speed with which Super Vac provides **controlled ventilation**... so necessary in modern fire fighting. This multi-purpose unit primarily (1) gets rid of smoke and fumes through its powerful vacuum action... or, (2) furnishes a tremendous blast of fresh air into the smoke-congested area, reducing the dangers of combustion and asphyxiation. Although one unit is often sufficient, **complete controlled ventilation** can be more speedily accomplished by using two or more units... one or more units **pulling out the smoke and fumes** while the remaining units **blow in a steady supply of fresh air.**

★ **Highly portable... operates in any position**
★ **Design permits vertical stacking**
★ **Made in 16" and 24" sizes**
★ **AC or DC, regular or explosion-proof motors**
★ **Choice of red or white baked enamel finish**
★ **Running board mounts available**

For complete details and specifications on

... contact your fire equipment dealer

... or write manufacturer

SUPER VACUUM

SUPER VACUUM MANUFACTURING CO., Inc
319½ East Seventeenth Ave., Denver 3, Colorado

chief so that he will be in touch with every phase of the emergency and the other unit is at his disposal for the purpose of maintaining contact with remote sources of water supply, such as portable pumps at farm ponds or creeks; his officer in charge of maintaining the flow of water through relay from pumper to pumper or by the use of several tankers; or from any other spot the emergency demands.

The secondary use of these units includes the communication necessary for such large gatherings as parades and boy scout shows, where the fire service provides protection from locations other than their quarters.

We have found these units so valuable that we expect to purchase two more.

Carl P. Johnson, Chief, Portland, Maine: Two portable radio units are carried by this department and operate on a fire department frequency.

They are assigned to the chief and deputy chief and carried on their cars.

These units are of great value, especially at dump fires where long lines of hose are laid and where relay pumps are put into operation to maintain pressure. Our walkie-talkies are used to transmit messages to the operators of these pumps to increase or decrease pressures.

Although this department has its own frequency, all radios and walkie-talkies can be changed to a county communication frequency by simply turning a switch from city to county level.

Clifton J. Baals, Chief, Fort Wayne, Ind.: We carry three portable radio units, also, there are three units available in our signal department.

The Fort Wayne Fire Department operates exclusively on its own frequency; which can both receive and transmit messages. This has speeded up our communications and eliminated many errors caused by messages having to be relayed.

These units are assigned to the chief, assistant chiefs, and district chiefs and carried on their cars.

Portable units are used only for emergency operations.

C. D. Sirmon, Chief, Mobile, Ala.: Three portable radio units are carried by our department, which operate on a fire department frequency.

They are assigned to the assistant chiefs and carried on their cars.

These units are used solely for emergency operations. □□

Celebrates 170th Year

Relief Truck and Engine Co. No. 1 of the Alexandria, Va., Fire Department is celebrating its 170th year of active operations during 1958. The company was organized January 23, 1788.

To commemorate the event, its members have published a short history which was written by Ashton N. McKenney, company historian. The 24-page booklet is well illustrated with photos of company officers and early apparatus. A large part of the contents are direct quotations from historic company records.

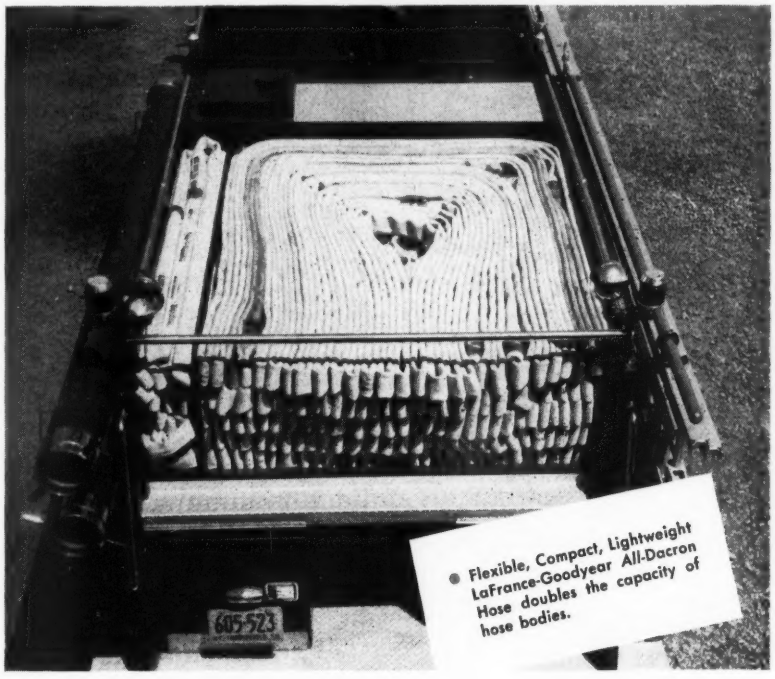
What's Burning

THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from July 17th to August 19th.

Little Rock, Ark.—Eisenberg Fur Co. damaged.
North Little Rock, Ark.—Building used as a storage facility by Little Rock Banana Supply, Inc. destroyed; small adjacent building, also used by banana firm, heavily damaged. Faulty wiring.
North Little Rock, Ark.—McLean - Arkansas Lumber Co. sawmill badly damaged.
Belmont, Calif.—California Sanitarium damaged.
Oakland, Calif.—Railroad overpass at West Grand Ave. and Wood Street destroyed. Tossed cigarette.
Oakland, Calif.—Truck garage of Hertz Corp. damaged.
San Francisco, Calif.—Merchandise Mart, wholesale show and exhibit building bordered by 9th, 10th, Market and Stevenson Streets, damaged.
Stockton, Calif.—Smith & Lang Department Store destroyed.
Tulare, Calif.—Tagus Restaurant destroyed.
Ansonia, Conn.—Lena's Specialty Shop, Tremont Bowling Alleys, Valley Dress Shop, Thrifty Poultry Products and Schoonmaker's Drug Store, destroyed or damaged.
Middleton, Conn.—Argosy Industries Co., plastic parts plant, badly damaged.
Southington, Conn.—The Castle, 15 room mansion, damaged.
South Windsor, Conn.—Tobacco and netting on Consolidated Tobacco Co. field damaged.
Odessa, Del.—Building of Monaco Foods Co. destroyed.
Washington, D. C.—White Front Market destroyed.
Jacksonville, Fla.—Dwelling of Frank P. Wood, 3314 Lake Shore Blvd., destroyed.
Atlanta, Ga.—Downtown supermarket and Flock's Grill damaged.
Atlanta, Ga.—Stein Printing Co. plant heavily damaged. Defective wiring.
Canton, Ga.—Bradshaw Mfg. Co., poultry firm, destroyed.
Boise, Idaho—Two buildings at Western Idaho State Fairgrounds destroyed.
Coeur D'Alene, Idaho—Fernan Creek Lumber Co. destroyed. Trash fire.
Coeur D'Alene, Idaho—Northwest Timber plant destroyed.
Council, Idaho—Boise Cascade Lumber Co. plant destroyed.
Chicago, Ill.—Villa Theater and business buildings owned by J. Beederman, Pontiac Engraving Co. and Avildsen Tool & Machine Co., damaged.
Elgin, Ill.—Freidrich's Furniture Store destroyed.
Tomaroa, Ill.—St. Mary's Roman Catholic Church destroyed. Lightning.
Fairmount, Ind.—Stewarts Furniture Store destroyed; adjacent auto agency damaged.
LaFontaine, Ind.—Farmers Co-operative grain elevator destroyed.
Logansport, Ind.—Pennsylvania Railroad roundhouse, including seven diesel locomotives, damaged.
Clarinda, Iowa—Chapel wing of Clarinda State Mental Health Institute destroyed.
Creston, Iowa—Building housing Kelly Food Market damaged. Overheated motor.
Danbury, Iowa—Danbury Public School gymnasium destroyed.
Jefferson, Iowa—Building housing Morehead Motors Co. destroyed. Gasoline dripping on trouble light.
Mission, Kans.—Self-service shoe store owned by David Weinstein damaged.
Corbin, Ky.—Several large buildings in main business district, including lumber firm and paint company destroyed or damaged.
Springvale, Me.—Two barns on Carpenter's Dairy Farm destroyed.
Baltimore, Md.—Exchange Furniture Store extensively damaged.
Cambridge, Md.—James A. Slacum Contracting Co. warehouse destroyed.
Lexington Park, Md.—Sunset Manor Restaurant & Bar and apartments at shopping center de-

New from American LaFrance and Goodyear...

ALL DACRON* HOSE



Lighter, Stronger Hose...
Absolutely rot-proof and mildew-resistant

Imagine a hose so tough that it can be deliberately mistreated and still outperform every other hose on the market. That's the all-new *all*-Dacron LaFrance-Goodyear hose. It can be buried in mud for days without a sign of mildew. It can be dragged over rough concrete or gravel—the all-Dacron hose will take four to seven times the wear of ordinary hose. After hours of use, it can be rolled up without drying – water can never affect it... LaFrance-Goodyear's All-Dacron Hose remains as strong as ever.

American LaFrance and Goodyear pioneered the use of Dacron as filler material in fire hose. Now we have developed an *all*-Dacron hose that tests 60% stronger than ordinary hose, yet weighs 20% less. It is so compact and flexible, it stores in half the space. In every measure of hose quality, the new LaFrance-Goodyear All-Dacron Hose is the new choice of experts.

All-Dacron hose is available from American LaFrance in both single and double jacketed types. LaFrance-Goodyear also manufactures quality hoses of other types and materials to meet every need of fire protection.

*Registered Trade Name for Dupont's Polyester Fiber

AMERICAN LAFRANCE
DIVISION OF STERLING PRECISION CORPORATION
ELMIRA, N. Y., U. S. A.
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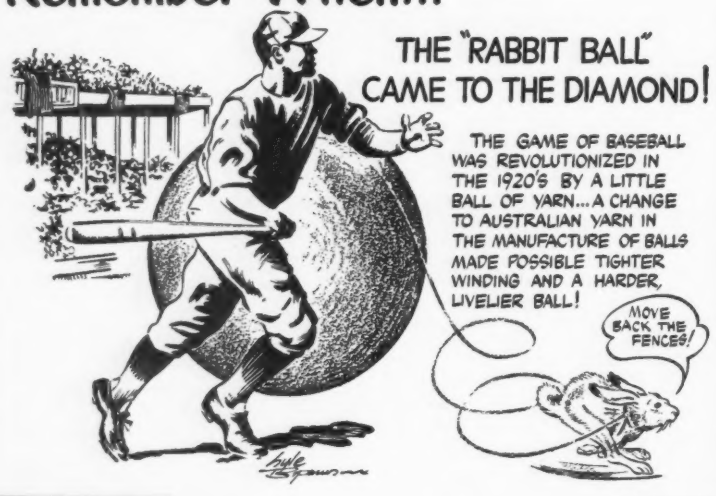
Remember When...


THE "RABBIT BALL" CAME TO THE DIAMOND!
THE GAME OF BASEBALL WAS REVOLUTIONIZED IN THE 1920'S BY A LITTLE BALL OF YARN... A CHANGE TO AUSTRALIAN YARN IN THE MANUFACTURE OF BALLS MADE POSSIBLE TIGHTER WINDING AND A HARDER, LIVELIER BALL!
MOVE BACK THE FENCES!

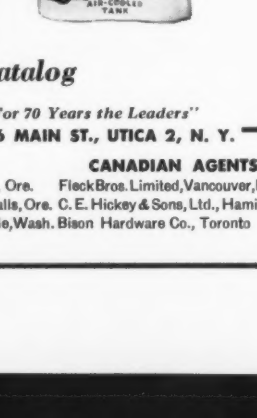
INDIAN FIRE PUMPS

revolutionized fire fighting over 25 years ago and are recognized today as ***"One Man Fire Departments — Worth Their Weight in Gold."***

No. 90 INDIAN
Sliding Pump Type

BOTH TYPES APPROVED BY UNDERWRITERS' LABORATORIES, INC.

No. 80 INDIAN
Lever Type Pump and Handle



"Nothing Like an INDIAN"

"We have 6 **INDIAN FIRE PUMPS** and have used them for 8 years. They are still just like new and we like them very much. We use them for everything including grass, house, barn, roof, rubbish and many other fires. There is nothing else like them."

Earl L. Koch, Asst. Chief
Ann Arbor, Mich. Fire Dept.

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406 MAIN ST., UTICA 2, N. Y.

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CANADIAN AGENTS
Fleck Bros. Limited, Vancouver, B.C.
C. E. Hickey & Sons, Ltd., Hamilton
Bison Hardware Co., Toronto

stroyed; Lexington Park Hotel and two nearby stores damaged.

Salisbury, Md.—Broyes Skateland destroyed.

Chelsea, Mass.—Klane Turning Co. and Chelsea Bakery damaged. Spontaneous combustion.

Holliston, Mass.—Barn and silo on Angus McPherson farm destroyed.

Lynn, Mass.—Apartment dwelling and two dwellings at 21, 19 and 23 Prospect Street, West Lynn, destroyed or damaged.

Somerville, Mass.—Commercial Barrel and Drum factory destroyed.

Ann Arbor, Mich.—Peerless Industries, plumbing supply plant, destroyed.

Battle Creek, Mich.—Security National Bank building, housing radio station WBCK, Princess Vogue Dress Shop, McCoy Jewelry, The Sandwich Shop, LaPaulls Furs, Neumode Hosiery Shop, L. G. Haig Shoe Store and professional offices, damaged.

Breckenridge, Mich.—Greening Auto Co. warehouse and adjacent Schneider Body Shop damaged.

Flint, Mich.—Beecher Department Store and Grocery, Burton Jewelry, Stuart's Variety Store and U. S. postal substation damaged.

Gladwin, Mich.—Barn on Elmer Tews farm destroyed.

Jackson, Mich.—Warehouse of Dunigan Bros., building contractors, damaged.

Pontiac, Mich.—W. N. McCandless, Inc., carpet and floor covering firm, destroyed; Modern Age Furniture Co. damaged.

Suttons Bay, Mich.—Herman building housing Huffman Store and C.U.B. Restaurant destroyed.

Aberdeen, Miss.—Kuhn Five & Ten Cent Store damaged.

Laurel, Miss.—Restaurant building of Camille Garbo destroyed.

St. Louis, Mo.—Goodwill Industries store heavily damaged.

Glendive, Mont.—Suhr Transport Co. building destroyed.

Milford, N. H.—Sawmill owned by William Faulkner destroyed.

Belvedere, N. J.—Two storage barns on A. Prall Smith farm damaged.

Bordentown, N. J.—Lubik Auto Agency destroyed.

Dunellin, N. J.—Dunellin Lumber & Coal Co. damaged.

Hoboken, N. J.—Bamboo & Rattan Works of Hoboken destroyed.

Medford, N. J.—Barn on Mrs. Lauretta Evans farm destroyed. Electrical cord.

Passaic, N. J.—Strand Shop dress store destroyed; Drake Business School and tailor shop in same building damaged.

Paterson, N. J.—Now abandoned Paterson City Hospital damaged.

Paterson, N. J.—Passaro's Recreation Center and attached apartments destroyed.

Perth Amboy, N. J.—E. J. Hurley Lumber Yard damaged. Arson suspected.

Riverdale, N. J.—Pompton Crushed Stone Quarry plant considerably damaged.

Union City, N. J.—Building housing Brentwood Co., tie makers, damaged.

Bedford Hills, N. Y.—Henry W. Barnett estate residence heavily damaged. Blowtorch.

Binghamton, N. Y.—Bower Mansion on Mount Prospect destroyed.

Lockport, N. Y.—Warehouse filled with waste-paper and owned by United Board and Carton Corp. destroyed.

Oswego, N. Y.—Shangri-La Racing Association's concession buildings and grandstand destroyed.

Poestenkill, N. Y.—Seven-Up Bottling Works damaged.

Poughkeepsie, N. Y.—Effron Bakery Supply Co. damaged.

West Albany, N. Y.—Abandoned New York Central Railroad shops considerably damaged.

Henderson, N. C.—Tobacco of Buck Short, tenant farmer, and seven barns of tobacco in rural Vance County destroyed; both barn and leaf being cured on N. S. Knott farm burned.

Raleigh, N. C.—Davis Garage housing several ambulances, heavily damaged. Gas tank being repaired exploded.

Sanford, N. C.—Tobacco barn of J. G. Dalrymple destroyed.

Washington, N. C.—Washington Supply Co. building damaged.

Cleveland, Ohio—Steeple of Epworth-Euclid Methodist Church destroyed.

Fostoria, Ohio—Grain elevator of Earl Ash destroyed.

Sylvania, Ohio—Comstock & Coventry Furniture Store destroyed. Short circuit.
Toledo, Ohio—Embers Restaurant destroyed.
Youngstown, Ohio—Building housing Fisher Co. and Standard Dry Goods Co. destroyed.
Aurora, Ore.—Stutzman Chicken Farm destroyed.
Bandon, Ore.—Curtin Sawmill destroyed.
Cottage Grove, Ore.—Cannon Rock Furniture Store and bowling alley destroyed.
Jefferson, Ore.—Dimick Mfg. Co. television equipment and Marion Linn grain warehouse destroyed.
Oregon City, Ore.—Howard Furniture Store destroyed.
Portland, Ore.—Fisher Flouring Mills warehouse destroyed.
St. Helens, Ore.—Columbia River Packers Association and Docks Dahlgreen Feed Co. destroyed.
Shedd, Ore.—Fern Cafe destroyed.
Springfield, Ore.—Nallays Potato Chip factory and Mackenzie Industries warehouse destroyed. Cotton seed oil explosion.
Clifford, Pa.—Dean-Johnson Inc. Garage and Auto Sales building destroyed.
Gladwyne, Pa.—Thirty-five room mansion on Walter C. Pew, Sr. estate destroyed.
Grove City, Pa.—Allied Newspapers, Inc., publishing plant, destroyed.
Lansdale, Pa.—Koehler & Fretz Inc. bakery garage destroyed.
Minersville, Pa.—Coal breaker owned by Jacque Coal Co. destroyed.
Philadelphia, Pa.—Adams Rug Cleaning Co. plant destroyed.
Philadelphia, Pa.—Columbia Carbon Co. badly damaged. Explosion.
Philadelphia, Pa.—Building occupied by S & S Sales Co. and firm of Joseph Maimon heavily damaged.
Philadelphia, Pa.—Foster Children's Home destroyed.
Philadelphia, Pa.—Westmoreland Mfg. Co. badly damaged. Spark ignited spraying booth fumes.
Sharon, Pa.—Jenny Shop destroyed; Kirby Shoe Store and offices in same building damaged.
Sharpesville, Pa.—Shenango Steel Co. warehouse, housing Valley Supply Co. and Dean Alexander Construction Co. supplies, damaged.
Stroudsburg, Pa.—Radio station WVPO, drugstore, store, department store and four other business firms, damaged.
Tafton, Pa.—Chicken barn owned by William MacDonald destroyed.
Uniondale, Pa.—Leon Entrot feed mill and grocery store destroyed.
West Reading, Pa.—Keiser Mfg. Co. plant destroyed. Overheated oil-tempering tank.
Wormleysburg, Pa.—Lamp Shoppe damaged.
Providence, R. I.—Pike Furniture Co. store and Windsor Pharmacy damaged.
Providence, R. I.—School department administration building at Pond and Summer Streets damaged.
Charleston, S. C.—Empire Furniture Co. warehouse and adjoining Southern Furniture Co. warehouse heavily damaged.
Columbia, S. C.—Large barn on State Penitentiary's Broad River Farm destroyed. Lightning.
Conway, S. C.—Maple Baptist Church and educational plant destroyed.
Nashville, Tenn.—Berry Field warehouse destroyed.
Dallas, Tex.—Continental Battery Co. and adjacent Primrose Petroleum Co. buildings damaged.
Houston, Tex.—Building housing Dixie Cone Mfg. Co., makers of ice cream cones, straws and paper cups, and Earle, Inc., drug packing firm, destroyed.
Houston, Tex.—Spring Branch High School damaged. Possible arson.
Anacortes, Wash.—Texaco Refinery Plant Damaged. Explosion.
Everett, Wash.—Elliott Bay Lumber Co. destroyed.
Seattle, Wash.—Bowles Plumbing & Heating Co. destroyed. Arson.
Spokane, Wash.—Farmer Feed Supply Co. elevator destroyed.
Tacoma, Wash.—Cliff House Restaurant destroyed.
Tacoma, Wash.—Imported Motors Co. destroyed. Explosion.
Vancouver, Wash.—Vancouver Hardware Co. and apartments destroyed.

Please turn page

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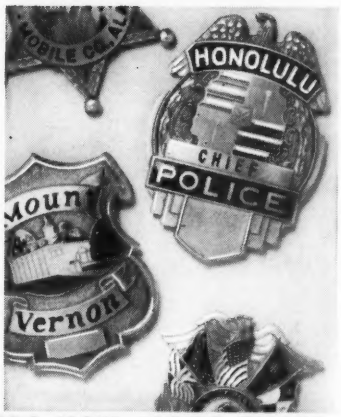

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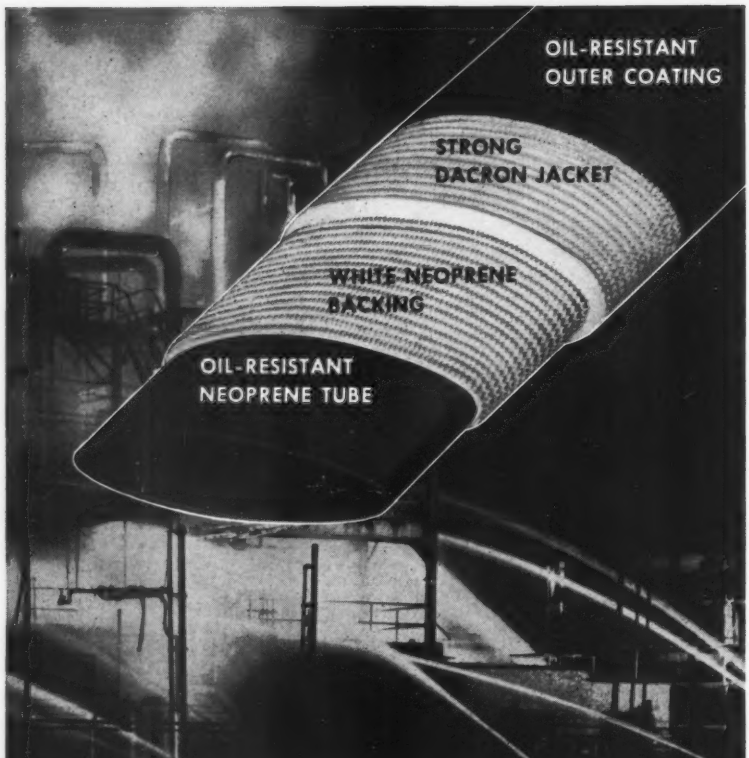

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QUAKER PETROCHEM is the first fire hose made especially to take the worst abuses of the chemical and petroleum industries. Here's how it does the job:

DURABLE • PETROCHEM hose stands up to abrasion and weather, because it's sheathed in a tough, flexible jacket of DuPont "Dacron." Oil-resistant neoprene tube and jacket-backing assure long life.

STRONG • Functions safely under high pressure (up to 500 psi) and excessive heat (up to 300° F).

CHEMICAL- AND OIL-RESISTANT • PETROCHEM 'White' defies deterioration both inside and out, has good resistance to acids, alkalies, and oxidants that attack from outside. For *extreme* corrosion-resistance, see next column.

FLEXIBLE • Takes tight twists or knots without injury. Coils easily and compactly. Only 30 lbs. per 50-foot length.

UL-APPROVED • PETROCHEM is the only 100% synthetic fire hose that carries the coveted Underwriters' Laboratories seal of approval.

FOR EXTREME CORROSION-RESISTANCE, as where fire hose is under constant exposure to severe chemical attack, specify PETROCHEM 'Black', which has the added protection of neoprene-impregnated "Dacron" jacket.

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QUAKER RUBBER DIVISION

Clarksburg, W. Va.—Checkerboard Feed Store destroyed.
Parkersburg, W. Va.—Universal Glass Products plant extensively damaged.
White Sulphur Springs, W. Va.—C. W. Lewis auto agency damaged. Static electricity ignited gasoline.
Kingston, Ont.—Collins Bay Penitentiary's paint shop, engineering shop and tailoring shop, destroyed.
Vineland, Ont.—Garden Center Theatre, summer playhouse, destroyed.
Montreal, Que.—Sun Truck Taxi, Ltd. building considerably damaged.
Sherbrooke, Que.—Garage and eight vehicles owned by Fabi and Sons, contractors, destroyed. □□

IAFF Survey Statistics

The International Association of Fire Fighters, AFL-CIO, has announced the results of a special survey conducted to determine injury and death rates among firemen. The study covered departments employing a total of 88,000 paid members, or 70 per cent of the approximately 125,000 full-time fire fighters in the country.

According to the Association, an American fire fighter's chances of sustaining a disabling work injury are almost 21 in 100. This is contrasted with three in 100 for the average worker. A fire fighter's chances of fatal injury are nearly 30 times as great as those of workers generally.

The report states there were 288 deaths of active firemen during 1957, and data was received on 272. Fifteen per cent died at the scene of a fire or from injuries received while fighting a fire; 40 per cent died from the result of heart conditions. The survey showed that about 550 firemen were forced to give up active fire fighting work during the year because of permanent injuries received in fire fighting or because of a heart condition or hypertension.

Obituaries

Charles A. Eisenhardt, Sr.

Charles A. Eisenhardt, Sr., 82, treasurer of The Hess and Eisenhardt Company, Rossmoyne (Cincinnati), Ohio, died August 5 at Jewish Hospital, Cincinnati.

His death marked the end of a 67-year-old partnership association with Emil H. Hess in the company which builds Sayres & Scoville ambulances, professional cars and other special purpose vehicles. Mr. Eisenhardt is survived by his wife; a son, Charles A. Eisenhardt, Jr., sales vice president of The Hess and Eisenhardt Company; and a daughter.

Chief John J. Shea

John J. Shea, 72, fire chief of Hoosick Falls, N. Y., for 41 years prior to his retirement in 1956, died June 26 at the Hoosick Falls Health Center following a long illness. He had also served as village trustee and mayor. □□

Among the Buffs

By Paul C. Ditzel

VACATIONING FIRE BUFFS in the New England area will find a great deal to interest them at the National Fire Museum at Edaville, South Carver, Mass., on Route 58.

Lieutenant Lawrence N. Clark sends along a folder describing some of the center's various displays. He says the museum is in its third season and that it has the largest display of old fire apparatus and equipment anywhere in New England.

"We are trying to make it educational, historical, and a help in boosting fire prevention," says Lieutenant Clark who, himself, heads the Newton, Mass., Fire Prevention Bureau. The showplace, incidentally, is in the heart of New England's cranberry-growing area.

"The purposes of this non-profit corporation are the preservation of all kinds and types of fire fighting and fire prevention equipment, both antique and contemporary, and the promotion of general safety by lectures, instruction, publications, and other means designed to stimulate interest in fire prevention," says the museum's handsome folder.

The display includes a fire helmet from a Soviet Premier, and such old apparatus as an 1812 hand pumper, an 1885 horse-drawn hose reel, an 1898 steamer, and a horse-drawn hose pung. (A tip of the Ditzel fire helmet to whoever explains what a 'hose pung' is.)

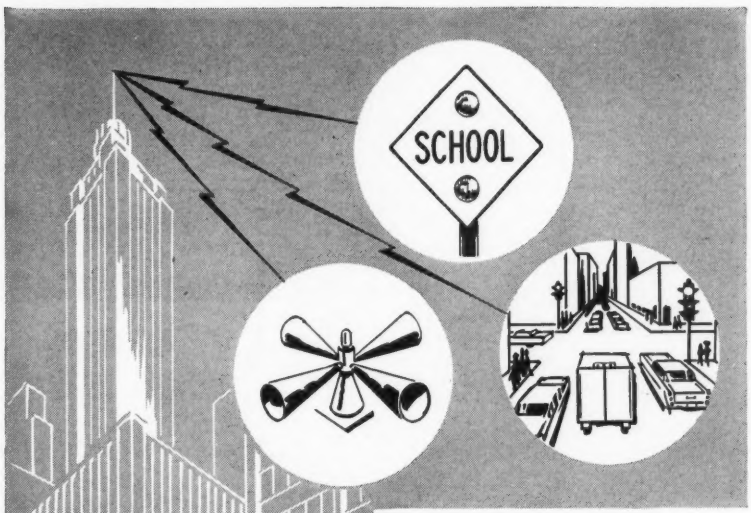
At Christmas time, says Clark, the building is lighted with thousands of colored lights. Sounds like a must-see stopping-off place for area buffs.

From San Francisco-way—the cultural suburb of Los Angeles—comes word that the energetic members of the Phoenix Society in anticipation of some "visiting firemen" passing through their city en route to the fire chiefs conference in Los Angeles, scheduled a no-host dinner and an evening of fire talk and good fellowship on Friday, September 12th.

Irving "Doc" Levin of 2671 Forty-Second Ave., San Francisco 16, and Joe Connell, 106 Westwood Drive, San Francisco 12, asked that any buffs or firemen wishing to attend the affair contact them. I, for one, can attest to the warmth of the good fellowship as put on by the Phoenicians. Some of them, I'm given to understand, plan to attend the Los Angeles convention if they can get their smog suits and clean-air cannisters out of hock, and/or mothballs.

That intrepid foreign correspondent, explorer, and Dalmatian fancier, Tom Jewett, Jr., was at last reports on his way home after his exhaustive and exhausting tour of European fire brigades. He postcarded from London that he was to have a trip on the London Fire Brigade's fireboat on the Thames by orders of Chief Officer Delve, a friend of this column. A jolly time was to be had by all.

Tom's postcard—as were the 536 others he sent me from the continent and



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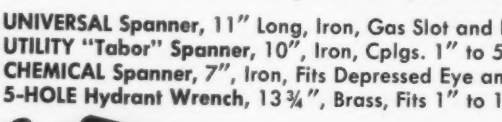

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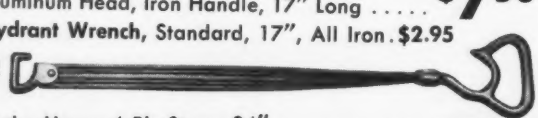

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British Isles—was interesting in that it showed a scale model of the Great Fire of London in 1666. The display is in the London Museum and was donated by John Joicey and made by J. B. Thorpe. Buffs in London please note.

Another itinerant buff was Francis A. Yandell of 1013 Woodgate Drive, Kirkwood, Mo., who saw a goodly part of New York City while looking for the New York Fire Department Museum. Seems that a policeman and a retired fireman steered him out to Long Island from Manhattan. It wasn't there.

So back he headed to town and had the great good fortune to see a fire station. They didn't know, either, where the museum was located, but the man who feeds the horses called headquarters and got the exact location: next to Engine 7 at 104 Duane Street. Yes, sir, if you want anything, just refer to this column and take heart from Buff Yandell's aching feet. He says the run-around was worth the trouble as there is a wonderful collection of apparatus and appliances.

Baltimore's Box 414 Association is still getting congratulated on its marvelous hospitality during the International Fire Buff Associates Convention in June. The club also sponsored a party at its quarters for members of the defunct Salvage Corps. They're assisting in finding jobs for the men of the corps following closing of that organization after faithfully serving the people of Baltimore for more than 75 years.

Along the fire-front, Box 414 Association's erstwhile president, Charlie Price, pulled Box 568 at Baltimore and Eutaw Streets at 8:34 a.m. not long ago. The alarm went into a 5-bagger for a four-story building. The address? You'll never believe this : 414 West Baltimore Street. It was the city's first extra alarm in 35 days. The club's canteen served 400 cups of coffee (another 14 and we really would have had a story to tell) and two quarts of seltzer. (The latter to assist firemen in getting rid of bellyfuls of smoke.)

While all the commotion was going on, Kevin Lee Paca Riley, 8 pounds, 2 ounces, made his entrance into the world. The son of 414'er Pat Riley, Baby Kevin was two weeks overdue. Said his mother beforehand: "It will take an additional alarm to have him born." And sure enough it did. Buff Pat missed the five-alarmer, says Editor Ray Wheatley. (Ed. Note: Did he even know it was burning?)

Jim Blomley of 30 Walnut Street, Everett 49, Mass., editor of the *Box 52 Newsletter*, reports that a fire at Box 1766 in Boston a loss of $1,500. No story there? But wait a minute. The cause, said the office of the fire commissioner, was "burning rats." Seems that the occupant was burning rubbish in the rear yard when he discovered a nest of rats. He splashed kerosene on it and touched it off. It went off all right, and so did the flaming rats—smack into the rear of the house and down into the cellar and up into the partitions.

That's "30" until another go-around. Please send all hose pung and burning rat stories to this column, c/o Box 8731, Crenshaw Station, Los Angeles 8, Calif.

Persons in the News

J. E. Lockwood Retires

Joseph E. Lockwood, Sr., district fire marshal, Eighth Naval District, New Orleans, La., applied for retirement on August 1, on the advice of his doctor, following several heart attacks during the past several years.

Lockwood served in the Plainfield, N. J., Fire Department from June 1924 to March 1946. He left the fire department in November 1942 to enter the U. S. Navy, serving with Naval Intelligence in New York City and as fire marshal at the U. S. Naval Training Center, Bainbridge, Md.

Following World War II, he returned to the Plainfield Fire Department briefly, then accepted a position with the Navy as civilian fire marshal at the Naval Amphibious Base, Little Creek, Norfolk, Va. In February 1950, Lockwood transferred to Headquarters, Eighth Naval District, New Orleans, La., as district fire marshal, where he has served until his retirement. He and his wife will move to California, where their son, J. E. Lockwood, Jr., is a member of the Los Angeles Fire Department.

Duke Elected by NFPA

T. Seddon Duke, president of the Star Sprinkler Corp., Philadelphia, Pa., has been elected chairman of the board of directors, National Fire Protection Association, to succeed the late Richard E. Vernor. Mr. Duke has been active in association affairs for over a generation serving as a director since 1949, and as president from 1954 to 1956. He is also past president of the National Automatic Sprinkler and Fire Control Association.

Johnson Named by Army

Arthur W. Johnson, first assistant chief of the White Sands, N. M., Missile Range, has been named fire chief of the Army Range fire department succeeding the late Ernest Boyd who died of a heart attack recently.

Johnson began his career in 1944 as a fireman at the Army Bombadier School, Midland, Tex. He transferred to White Sands in 1947 and in 1956 was appointed first assistant chief. □□

Baltimore Losses Down

Fire losses in the City of Baltimore, Md., were reduced by 35 per cent during the year 1957. Total damages are listed as $4,683,011 versus $7,274,820 in the preceding year.

The drop is said to be due to accelerated emphasis placed on fire prevention and fire fighting training within the department. There were 44 large-loss fires during the year compared with 64 in both 1956 and 1955.

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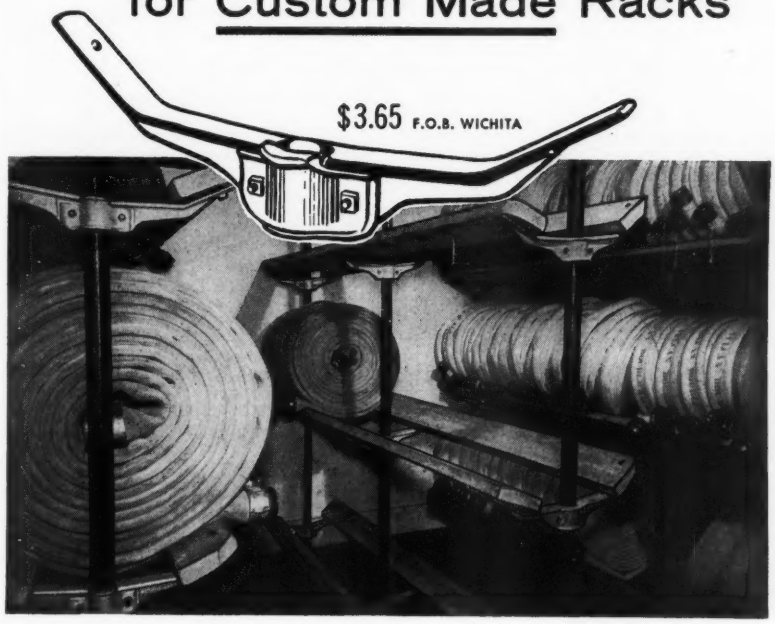

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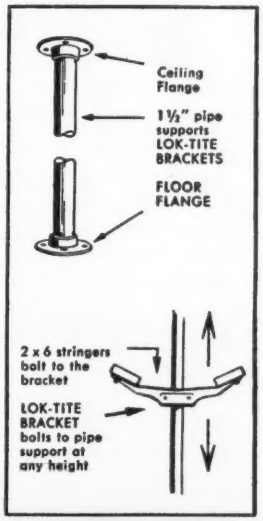
Lok-Tite fire hose brackets provide storage racks in odd dimension areas where ready-made storage will not fit. Encourage good housekeeping practices . . . assure easy hose inspection and correct ventilation by building sturdy storage with Lok-Tite brackets approved by hose manufacturers and fire departments everywhere.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THE WATCH DESK

overhauling the firemanic news of the day

Firemen Fight Rats

Kansas City, Mo., firemen have chalked up a new one in extra-curricular activities. Beginning July 25, the men began distributing a mixture of horse meat and rat poison in 380 sewers, catch basins and manholes in an extensive program designed to control the pestiferous rodents.

Originally 36 companies were to start the first day's distribution, but 10 of these had to answer an alarm for fire and an explosion. Their part in the program was postponed until the following day.

No More Maine F. D. Plates

The Bangor, Maine, Fire Department vehicles no longer bear state license plates. The state legislature has amended a law pertaining to registration of vehicles making it no longer necessary for any vehicle owned by a municipal fire department or an organized volunteer fire department to display registration plates.

The change was sponsored by the Maine State Fire Chiefs Association. While no municipality in the state has had to pay for its plates for department vehicles, the change has done away with a lot of bookkeeping, including the filling out of the various applications and the work of installing and maintaining the new plates after taking off the old ones or, as the case might be, the tabs.

Jack Kearns

Finds Tick—Then Disaster

In Alexandria, Va., James Prohaska, 9, found a wood tick and decided to burn it. He took the insect to the garage, soaked it in gasoline and lit it. The gasoline can exploded, setting fire to James' clothing and the garage.

An older brother rushed to James' aid and suffered burns on his hands while pulling the young boy to safety. James, his clothes on fire, ran to the house where his mother and another brother were burned while smothering the flames. A few minutes later a younger brother, who had run to watch the fire, was found choking from smoke. All were treated at Fort Belvoir Hospital.

Firemen estimated the blaze caused $2,000 damage to the house and garage.

Hot Off the Tape

Two Chicago boys recently ran away from home after setting fire to a garbage can. They feared being fined $200 if police learned of their prank. . . . On July 29, members of Jersey City's N. J., Ladder 6 answered a second alarm. During the company's absence from quarters, a thief stole $25 from a locker as well as the helmet of Captain Joseph Schill. . . . A farm dwelling in Franklin Township, N. J., recently burned to the ground. Following the fire, the two owner-brothers told police that $17,000 in cash, which they kept in a box, was also burned to ashes. . . . Chicago police recently arrested Isaac Wilson, 35, on the steps of a west side church with oily rags and newspapers in his possession. They quoted him as saying he intended to set fire to the church. Police said he admitted touching off two other churches, resulting in disastrous fires, because he resented not being allowed to bring his dog into church with him. . . . Early last June a rescue team battled rugged terrain and snow on Hunter Mountain near Catskill, N. Y., to bring a 68-year-old fire observer down from his mountain-top station after he had become ill. The 3½-mile jeep trip took two hours. . . . A 19-year-old youth of Elba, N. Y., died from loss of blood following a severe puncture wound of the right hip and other injuries caused by an explosion on July 22. Keith A. Wallace was making firecrackers in the backyard of his home at the time. Investigators said the evidence showed he was mixing ground charcoal, sulfur and saltpeter. □□

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FIRE COLLEGES

Arizona State Fire School—Oct. 16-18, Phoenix, Ariz., Director, Battalion Chief Jake Siken, Fire Fighting Instruction Supervisor, 49 South First Street, Phoenix, Ariz.

Fire Fighting Seminar—Oct. 24-25, Huntington, W. Va. For information, contact Captain R. M. Myers, Station 5, Huntington Fire Department, Huntington, W. Va.

Florida State Fire College—Sept. 22-26—**Units 103**, Rescue, Ventilation, Salvage and Overhaul; **105**, Fire Apparatus and Pumps; **204**, Fire Fighting Tactics. Sept. 29-Oct. 3—**Units 104**, Fire Streams; **206**, Fire Prevention and Protection; **208**, Fire Department Administration. For information, contact W. H. Barnett, Superintendent, P. O. Box 785, Ocala, Fla.

Kansas State Fire School—Oct. 20-23, University of Kansas, Lawrence, Director, Clyde A. Babb, 111 Fraser Hall, University of Kansas, Lawrence, Kansas.

Michigan Industrial Fire Control Seminar—Nov. 10-11, University of Michigan, Ann Arbor, Mich. For information contact Francis Hartman, Supervisor, Firemanship Training Program, 1610 Washington Avenue, Ann Arbor.

Morris County, N. J., Fire School—October 7, Denville Fire Headquarters, Denville; November 11—Mill Brook Fire Headquarters, Randolph Township; December 2, Madison Fire Headquarters, Madison. For information write Robert H. Wright, Publicity Chairman, Long Hill Lane, Chatham, N. J.

New Mexico Fire Protection Conference—Oct. 13-15, Socorro, N. M.

North Carolina Pump School—Sept. 29-Oct. 1, Firemen's School Building and Training Grounds, 2601 Seventh Street, Charlotte, N. C. Director-Conductor, Chief Charles L. Burkett. For information, contact Charlotte Fire Department, 125 S. Davidson Street, Charlotte, N. C.

Ontario Fire College—Sept. 22-26—Fire Inspection Practices; Sept. 29-Oct. 10—Techniques of Instruction for Fire Department Instructors; Oct. 20-24—Fire Forum for County Fire Coordinators. All courses to be held at Ontario Fire College, Gravenhurst, Muskoka, Ont. For information, contact D. E. Barrett, Director.

Pennsylvania Fire School—Apr. 28-Nov. 1. Six distinct courses within each training cycle, held at Pennsylvania Fire School. For information, contact Art Espey, Director, Box 631, Lewistown, Pa.

Suffolk County Fire Chiefs' Field Conference. Annual meeting, Sept. 20-21, Suffolk County Fire Training Grounds, Yaphank, N. Y. For information contact Ernest G. Wilcox, P. O. Box 125, Smithtown, N. Y.

U. S. Atomic Energy Seminar—October 23, New Haven Fire Fighters Training School, New Haven, Conn. Seminar limited to fire and police instructors of New Jersey, New York and the New England states who have previously attended the Commission's three-day course on "Radioactive Hazards in Industry." For information, contact Francis L. Brannigan, U. S. Atomic Energy Commission, Washington, D. C. □□

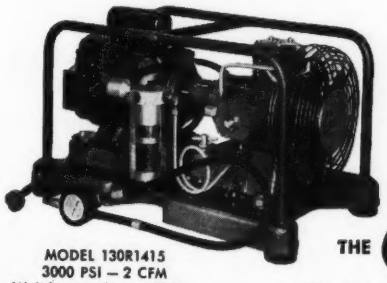
Every two minutes fire damages or destroys someone's home in a United States city.

From one chief to another . . .

CHIEF WM. J. CAWKER
TOPEKA, KANSAS, SAYS:

"The Cornelius air compressor is a valuable asset to any fire department."

Chief Cawker reports: *"The City of Topeka moved to replace canister type masks with pure air masks in May, 1952. When the change-over was completed we solved the problem of a dependable supply of compressed air through the acquisition of a Cornelius Model 130R1415 high pressure air compressor. This cleared up any uncertainty of an adequate supply of clean air. This compressor is a valuable asset to any fire department."*



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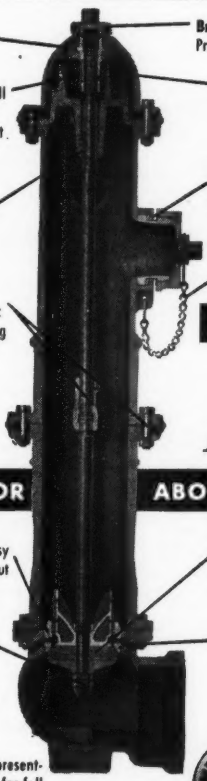

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Permanent seals without adjustments or binding.

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Prevents permanent traffic damage and permits facing of nozzles, extensions or barrel changes without digging.

Bronze Weather Cap
Prevents ice-locking of operating nut.

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Operating threads and bearing surfaces sealed from water.

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Interlocking lugs plus calking prevent blow-out.

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DESIGNED FOR ABOVE-GROUND MAINTENANCE!

Bronze Seat Ring
Straight threads permit easy removal from above without digging.

Bronze Cap Nut

Compression-Type Main Valve
Closes with the water pressure—and stays closed. Permits repair or modification without water shut-off!

Double Drain Openings
Automatically force-flushed each time hydrant is opened or closed.

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Questions and Answers

wherein are answered questions relating to current problems in the fire protection

Friction Loss Factors

To The Editor:

1. How are friction loss factors derived?

2. In converting siamese layouts involving a 3-inch line and a 2½-inch line supplying a deluge nozzle, I have noted that some solutions use a factor of 6.1 while others use both 2.6 and 3.6. Which is the correct method?

P. S.

Answer 1: Factors represent the approximate difference in friction loss for a given quantity of water flowing in a given size of hose and the same quantity flowing in 2½-inch hose.

For example 200 gpm flowing in a 2½-inch line creates approximately 10.1 psi friction loss. The same flow in 3-inch hose causes about 3.9 psi or a difference of 2.6. The latter figure is the conversion factor and is useful in various hydraulic formulas for converting 3-inch to 2½-inch hose, the common base of fire service calculations (See page 23, "Fire Engine Tests and Fire Stream Tables, NBFU).

Answer 2: The factor 6.1 may be used to directly convert layouts involving equal lengths of parallel 3-inch and 2½-inch hose siamesed to a nozzle. By its use, two mathematical steps are eliminated and the answer given is considered more accurate than that derived by the following method.

Where unequal parallel lines are involved, the 3-inch hose is first converted to 2½-inch hose by using the factor 2.6. The two line lengths are then averaged and converted to a single equivalent length by use of the factor 3.6. The result is then substituted in hydraulic formulas in the normal manner.

The above method may also be used to solve problems involving parallel lines of equal length (See "Fire Service Hydraulics," Chapter 4, Page 51; and Chapter 5, Pages 96-103).

Finding Length of Line

To The Editor:

A pumper is operating at a pressure of 204 psi pumping through a 2½-inch line to a 1¼-inch nozzle. The nozzle pressure is 60 psi. Which of the following is the length of the line? (a) 450 feet; (b) 500 feet; (c) 55 feet; (d) 600 feet; (e) 750 feet.

E. R.

Answer: Engine pressure minus the nozzle pressure equals the total friction loss for the layout. If the friction loss per hundred feet is found, the length of the line may be determined by simple division.

In order to find the friction loss, it is necessary to determine the quantity of water flowing under the stated conditions.

1. Use the formula $Q=29.7\ D^2\sqrt{P}$
   $Q=29.7\times(1.25^2)\times\sqrt{60}$
   $Q=29.7\times1.56\times7.75$
   $Q=354$ gpm
2. Determine friction loss by formula $2Q^2+Q$
   $FL=2(3.54^2)+3.54$
   $FL=2(12.5)+3.54$
   $FL=28.5$ psi per 100 feet
3. $FL=EP-NP$
   $FL=204-60$
   $FL=144$ psi total
4. Length of line $=\frac{144}{28.5}$
   Length of line $=5.06$ (in hundreds)
   Length of line $=506$ feet

Therefore (b) is the answer.

Dry Chemical vs. Powder

To The Editor:

Is there any difference between dry chemical and dry powder fire extinguishers?

J. L.

Answer: When first introduced the extinguisher which is generally referred to as "dry chemical" was also called "dry powder." It is still referred to in some areas by the latter name. It employs a finely ground mixture of sodium bicarbonate with water-repellant and anti-caking agents as the extinguishing medium. Its extinguishing effect is usually credited to the blanketing effect of the

A new high-pressure coupling by BAR-WAY for all types of fabric hose

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Available in polished bronze in both standard rocker and forestry lug. 1½" in production. Larger sizes will be available.

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dust cloud which is ejected from the container by means of gas pressure.

In more recent years extinguishing agents for flammable metals have been developed which use powered graphite, soapstone or calcium chloride as the base material. The latter is marketed in a portable extinguisher form.

In order to prevent confusion between the various agents, it is common practice in the industry to refer to extinguishers employing sodium bicarbonate as "dry chemical" and those for use on metal fires as "dry powder." To the best of our knowledge there is no rigid standard for this definition.

FL in Siamesed Lines

To The Editor:

How would you solve the following problem? Four parallel siamesed 2½-inch hose lines, each 600 feet in length, carry a combined total of 800 gpm. What is the friction loss in the layout?

J. M. C.

Answer: There are two methods which may be employed:

1. Substitute in the 'Underwriters' formula $(2Q^2+Q)$ and divide by the factor for reducing four 2½-inch lines to a single 2½-inch line (12.4).

$$\text{Thus: } FL=\frac{2(8^2)+8}{12.4}=\frac{2(64)+8}{12.4}$$

$$=\frac{128+8}{12.4}=\frac{136}{12.4}$$

$$=10.9 \text{ per } 100 \text{ feet.}$$

$FL=10.9\times6=65.4$ psi.

2. It can be assumed that equal volumes are flowing in each line. Dividing 800 gpm by 4 shows that 200 gpm are flowing in a single line. Substituting in the same formula $(2Q^2+Q)$ and multiplying the answer by 6 gives the following:

$2(2^2)+2=2(4)+2=8+2=10$ psi per 100 feet.

$10\times6=60$ psi.

The Underwriters' friction loss tables show 10.1 psi friction loss under the same conditions. This would equal a total of 60.6 psi for 600 feet. Therefore either method will give a reasonable answer.

Austin Pamphlet Promotes Good Public Relations

The Austin, Tex., Fire Department, Chief J. E. Woody, uses a 10-page pamphlet describing the life of a fireman to promote pubic relations with visitors to its central fire station. After being given a guided tour of the facility, the booklet is presented to each visitor as a souvenir of his trip. During 1957, there was a total of 109 different groups visiting the station. Included were 1,855 children and 275 adults.

The well-illustrated two-color pamphlet was prepared by the fire department with text and layout by Vernon Kunshick, administrative assistant, and photographs by Frank Albrecht.

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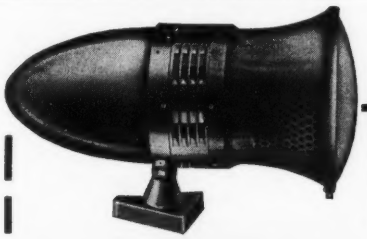

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Here's my dollar!
Rush a bottle of Konkr-Burn to me. Satisfaction, or money back.
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Coming Events

Sept. 24-27—**California State Firemen's Association.** Annual meeting, Santa Barbara, Cal. Secretary, E. L. Albrecht, Sr., 755 - 17th Street, San Bernardino, Cal.

October 4—**Maryland State Ambulance and Rescue Association.** Rescue Day, Fire Service Extension Building, University of Maryland, College Park, Md.

Oct. 17-19—**Nebraska State Volunteer Firemen's Association.** Annual meeting, North Platte, Neb. Secretary-Treasurer, Russell D. Salak, Box 312, Schuyler, Neb.

Oct. 21-23—**Illinois Firemen's Association.** Annual meeting, Joliet, Ill. Secretary, Roy W. Alsip, Champaign, Ill.

Nov. 6-8—**Washington Fire Commissioners Association.** Annual meeting, Bellingham, Wash. For information contact Fred Dustin, 2195 Mt. Baker Highway, Bellingham, Wash.

Nov. 13-15—**International Rescue and First Aid Association.** Annual meeting, Jacksonville, Fla. Executive Director, Max L. Spray, 101 North Alfred Street, Alexandria, Va. □□

Surprise Church Drill

On Sunday, August 17, at 10:30 a.m., the Welch, W. Va., Fire Department received an alarm for the First Baptist Church. The chief's car and one pumper responded.

Upon arrival, the pumper stretched a line from a nearby hydrant to the church door. It was noted the entire congregation of about 150 members had already filed out of the building in an orderly fashion. The only excited persons in the area were the passer-by spectators.

This incident was a church fire drill which the Reverend Raymond Adkins, pastor, had arranged in cooperation with Fire Chief D. L. Salisbury and R. L. Pike, church officer. No one in the congregation or the fire department, other than the aforementioned had any knowledge of the prearrangements. As a result it was considered very successful.

Chief Salisbury reports to FIRE ENGINEERING that the First Baptist Church has been working very closely with the fire department for over a year, and he believes that church fire drills are an excellent idea. He also states the drills are being adopted in other areas as reports of success are circulated.

Atomic Energy Seminar

The United States Atomic Energy Commission in cooperation with the New Haven, Conn., Fire Department, Chief Thomas Collins, will hold a one-day advanced seminar at the New Haven Fire Fighters Training School on October 23.

The seminar will be held from 8:30 a.m. to 4:30 p.m. and will be limited to fire and police instructors of New Jersey, New York and the New England states who have previously attended the Commission's three-day course on "Radioactive Hazards in Industry." Francis L. Brannigan of the Atomic Energy Commission will coordinate the program.

DRAGON FIRE PUMPS

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World-Wide Fire News

1958 "Tea Party"

Considerable concern was caused by the report that the cargo of tea carried by the Norwegian freighter Tancred, which docked at Bush Terminal, Brooklyn, was radioactive.

A large group of officials, led by the New York Fire Department's radiological team, headed by Captain Andrew A. Keil, stalked 821 cartons of green Japanese tea with Geiger counters on July 31. Included in the hunt were Coast Guardsmen, Customs and Food and Drug Administration officials, policemen and longshoremen.

Two weeks before the ship docked in New York, Coast Guard security men in San Francisco reported that 46 tons of Japanese tea was "slightly radioactive." Thus, when the ship arrived in Brooklyn, the hunt was on.

According to Captain Keil, traces of radioactivity were slight (only small traces of Strontium 90 were found) and the department issued a certificate to the effect that there was no internal hazard from the tea. Nevertheless the Food and Drug men started tests on the tea. The cargo of sugar and other consignments, as well as the suspected tea, was spread out on the pier for examination by Federal experts.

Captain Keil said that an attempt to identify the sources of contamination would be speculation. Strontium 90 falls out of the atmosphere and into the soil. Tea coming up from soil so contaminated would show radioactivity. Fall-out on the tea itself could occur after the leaves had formed.

Scrap Atomic Pile

The British Atomic Energy Authority has decided to scrap an atomic energy pile that caught fire and released radioactive material over the surrounding countryside last October. The authority said it would be uneconomic to restart the pile at the Woodside plutonium plant.

Uranium cartridges in the pile became overheated last fall and radioactive material was released over a 200-square-mile area. Milk produced by 150 farms in the affected location was banned and 3,000 gallons a day dumped into sewers.

Costly Brazilian 'Dump' Fire

The ordnance depot of Vila Militar Army Base, Brazil, blew up in a series of explosions on August 2, causing two deaths, injuries to 50 persons and an estimated $20 million damages. The main Brazilian army base, headquarters of the 1st Army, is situated about 18 miles from Rio de Janeiro in densely populated suburban Deodoro.

The disaster was said to have been caused by a fire which swept the ordnance depot. It was discovered by a sentry about midnight in one of the more than 50 munitions dumps in the reservation. All military personnel were evacuated and firemen were called.

As the explosions continued, the firemen were driven back and finally forced to withdraw about 3 a.m. when major explosions, involving 75 mm and 105 mm artillery shells occurred. The fire fighters were unable to return to the scene until 10 a.m. One fire engine, left behind when its motor failed, was blown to bits.

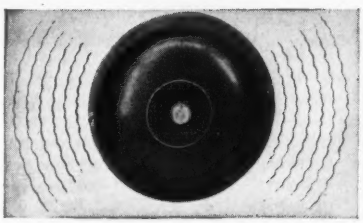
Army authorities quickly ordered evacuation of 30,000 soldiers and panic-stricken civilians from the area. It is said this quick-thinking prevented a heavy death toll. The two deaths which did occur were attributed to fright. Troops then cordoned off an 8-square-mile zone surrounding the blaze.

Explosions knocked out a power station, leaving a large section without electricity or telephones except for military field equipment. Windows and doors were blown out of the residential dwellings in the neighborhood.

Off the World News Ticker

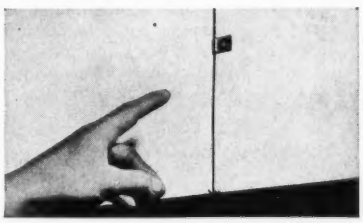
Senator Thomas H. Kuchel (R-Calif.) has introduced a bill calling for Federal expenditure of $300,000 to transfer decaying movies to a permanent safety film. Among the films considered priceless are those showing the 1904 Balti-

AUTOMATIC FIRE ALARM

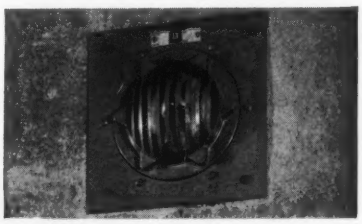


1. Save priceless lives, protect valuable buildings with the Kidde Atmo Fire Detecting and Alarm System!

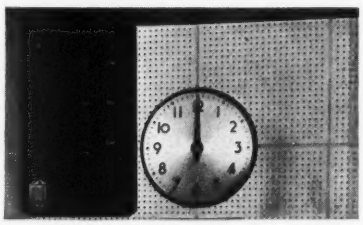
2. This automatic detecting and warning system sounds an alarm instantly at the *first* hot breath of fire!



3. It uses rate-of-temperature-rise tubing as a sensing element. The system works even if outside power fails!



4. Kidde's Atmo system can sound alarm at fire area, outside the building or at local fire department station!



5. Kidde's Atmo system also gives fire location at a panel near any manned telephone switchboard!

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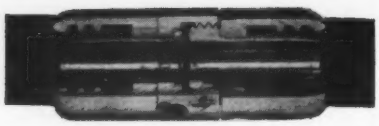

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more conflagration and the 1906 San Francisco earthquake and fire. . . . The Olympia, Admiral Dewey's flagship at the Battle of Manila Bay, was damaged by fire on July 17. Ship is in Philadelphia drydock being reconditioned as a permanent shrine. . . . The famous Monte Mario Observatory at Rome, Italy, was virtually destroyed by fire July 15. Professor Guiseppe Armelli, the observatory's 71-year-old former director, died of a heart attack while rushing to help fight the fire. . . . In another Italian incident, an explosion July 19 on the ship Citta di Sorrento, docked in Capri Harbor, killed one crewman and injured two others seriously. A compressor blew up. . . . London commuters have their subway troubles no less than those in this country. Twenty-four were injured July 28 when a faulty subway train motor burned up during the morning rush hour. . . . An unexplained explosion and fire wrecked the Mines Department survey launch Scaup docked at Barrington Passage, N. S., on August 4. Three crewmen were injured. . . . Eleven persons were killed and two injured when a fireworks plant in Fuchu, Japan, was blown to bits. The factory was isolated in a field about a mile from the U. S. Fifth Air Force headquarters. Base policemen helped in the rescue work. . . . In Cannes, France, hundreds of firemen fought isolated pockets of raging forest fires August 8, which burned 8,000 acres of timber land in the hills flanking the Mediterranean. . . . Oddity of the foreign news: Radio sets in the Wallis Islands, a French protectorate in the Pacific, were reported on August 2 to have been burned out by intense radiation. The radiation is thought to have been produced by a U. S. nuclear explosion on Johnston Island 2,500 miles away.

Blasts Beset Baghdad

When a huge oil tank exploded in the outskirts of Baghdad, Iraq, on July 30, there was much confusion and alarm. Wild rumors spread through the city after the blast at 3:25 p.m. Before curfew was imposed the streets were crowded with excited people who blocked traffic.

The tank was owned by the Khanaquin Oil Company, a subsidiary of the British Petroleum Company, but was leased to the Iraqi Government as a reserve storage unit. At first the blaze was attributed to sabotage, but later the cause was reported to have been a carelessly tossed cigarette.

The explosion raised a pillar of smoke that covered the city during the day and brought hordes to the scene. The city curfew was put back to 8:00 p.m. from 10:00 p.m. to permit fire fighting forces to get through. Three foam trucks of the Iraq Petroleum Company were blocked for some time by the traffic jam while en route to the fire.

As an offshoot of the blaze, two U. S. Marines were arrested by Iraqi army authorities when they strayed too close to the fire. They were reportedly not in uniform at the time. ☐☐

McINTIRE GATE VALVES

Fig. 164AN

4½" swivel female x two 2½" male Gated Siamese. Quick opening, ¼ turn valves.

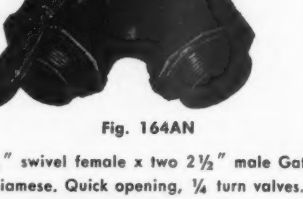

Fig. 163

Made either Right Hand or Left Hand 2½" male x female, gate valve.

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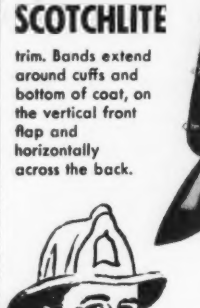


SCOTCHLITE will REFLECT LIGHT with dazzling brilliance on dark streets and in smoke filled buildings.

Firemen GET what they WANT in JANESVILLE suits!

Janesville APPAREL CO. JANESVILLE, WIS.

TANK FARM FIRE

Continued from page 848

dikes, but this did not eventuate as the heavy fog stream was quickly converted to steam by the flames. At one period, a water curtain was set up to protect the Vernon hose unit and operator.

A number of vacuum tank trucks were brought in to siphon off the oil after it was extinguished.

Smoke was visible for more than 100 miles and burning oil caused minor damage in the general area to cars and buildings. Four hundred patients were evacuated from the nearby Long Beach General Hospital and operations were shut down at the airport.

The burning oil undermined fixed horizontal natural gas tanks of Long Beach at the northeast end of the fire, but these did not blow. Eighteen adjacent filled LPG tanks were also threatened, but County Engine 105 hooked three 2½-inch lines to a sprinkler system and set up a cooling fog which saved them.

Firemen were hampered by low water pressure and by the necessity for laying long lines due to danger of losing or damaging heavy apparatus. Long Beach firemen alone laid 40,000 feet of hose.

The L. A. City Fire Department shuttled captains for its oil field and harbor Battalion 6 in shifts to the fire for training purposes. L. A. County training officers were also brought in to evaluate and inspect the extinguishing methods.

Directly in charge of the fire were Chiefs Colson, Sandeman and Assistant County Chief Harvey Crutchfield with numerous chiefs from the County and Long Beach assisting. Chief Colson reports that the exact cause of the fire still is unknown, but it is believed water got into the tank. □□

CHEMICAL TRANSPORT FIRE

Continued from page 845

formation from the firm's chemist confirmed the fears of terminal and fire force personnel, while justifying the fire fighters' speedy actions. It was disclosed that the 205 carboys contained a highly flammable liquid possessing highly toxic properties and subject to violent explosion.

The decision to use quantities of water had already been followed, but the advice to stay away from the burning chemical had to be ignored if the blaze was to be quelled. By this time the deputy chief had arrived and taken charge of operations. He ordered the rear doors opened and the cargo flooded. In this operation the big lines were supplanted by small hand lines using 1½-inch low pressure fog nozzles. Gas masks were necessary to allow the firemen to perform the overhaul of the damaged freight. The toxicity of the liquid had been recognized from the first and demand-type masks were placed in use.

Although the way bill listed 205 carboys, it said nothing of the chemical being of two different types. Even the chemist knew nothing of the cargo being mixed. One hundred sixty carboys contained the chemical "75 per cent T—Butyl Peracetate with Benzene." The labels for this material read *"Extremely flammable liquid, harmful poison, store in cool place (not over 100° F.) and protect from direct rays of the sun."* None of these carboys was damaged by the fire, but of the 45 remaining containers which held an unidentified liquid, only three remained intact. This was not discovered until the truck was unloaded, which operation was carried out under cover of a water spray for safety.

Further conversation with the chemist disclosed the fact that this unknown chemical, also used in the manufacture of plastics, was even more hazardous than the other and was to be kept at temperatures below 70° F. The three undamaged bottles which had not been shattered by the heat or the explosions, were taken to the city dump because the liquid had become discolored, and there destroyed. Observers reported that this set blaze, fed by the chemical, was quite intense, producing clouds of smoke.

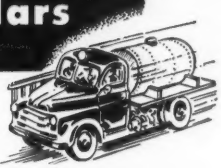
Findings

The post-fire discussion brought out several factors bearing on this incident:

1. The chemicals were used in the manufacture of plastics and should not have been shipped in the same van.

2. The highly dangerous carboys were

Build your own fire truck for a few hundred dollars



The time has come when rural fire protection should leave the "Fancy Dan" class so that every small community can do a real down-to-earth job of extinguishing fires rapidly, simply and inexpensively.

The nickel plate, red paint, gadgets and polish are good if you can afford them. But all you need for sound, economical fire protection is an Oberdorfer All Bronze Pump hooked up to the transmission of a dependable truck that carries a tank of water loaded with a good wetting agent.

Effective fire control starts just as soon as this outfit can reach its destination and a man can grab the nozzle end of the booster hose and get to the fire. The resulting penetrating stream of over 100 lbs. pressure is the fastest and most important phase of fire fighting.

Do you have a garage, a truck and a mechanic with a little common sense? We have the pump you need. Write for details.

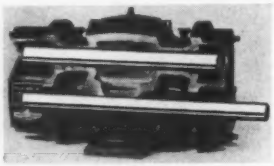
PERFORMANCE DATA—No. 26 PUMP SHOWN ABOVE

Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
1600	120	500'—1½"	20'	150

For complete specifications of this and other Oberdorfer All Bronze Booster Pumps, and name of your nearest distributor, write:

FIRE PUMP DIVISION OBERDORFER FOUNDRIES, INC., Syracuse, N.Y.

TOUGH SHAFTS Heat Treated Steel carry the power load in your rugged Leonard pumping unit



LEONARD *Rotary Gear* **PUMP**

THE self-priming pump that can run continuously with NO maintenance . . .

THE versatile pump that really DOES reduce your Department costs!

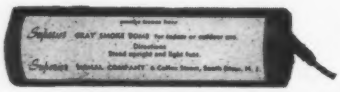
ASK the Chief who uses one, **ASK** your local dealer, **ASK ANYBODY** who knows pumps!

POTTER-HORN INC.
936 Statler Bldg., Boston 16, Mass.

Impress your hometowners with a smartly executed fire fighting demonstration during

FIRE PREVENTION WEEK
OCTOBER 5-11

For a truly thrilling and safe demonstration use Superior Smoke Items to generate dense swirling smoke simulating actual fire conditions. Superior smokes are NON-TOXIC, LEAVE NO RESIDUE and CONTAIN NO EXPLOSIVES.



The Superior Gray Smoke Bomb (illustrated) burns for 2-3 minutes generating 25,000 cubic feet of smoke. Mailable.
$7.50 per dozen.

The Superior Five Minute Smoke Bomb burns for five minutes generating 100,000 cubic feet of gray smoke. Mailable.
$2.00 each.

The Superior Smoke Grenade burns for 3 minutes generating a terrific 150,000 cubic feet of smoke. Has built in pull wire ignitor. Unconditionally guaranteed for FIVE YEARS.
$3.00 each.

Prices are f.o.b. factory.
All Superior Products are guaranteed.

Order from your regular fire equipment dealer or write us:

SUPERIOR SIGNAL COMPANY, INC.
6 Colfax Street South River, N. J.

supposed to be kept under 70° F. and verbal orders had been given to this effect. (When the 45 carboys had last been cooled, was not disclosed.)

3. The trailer was a metal-top, uninsulated, non-refrigerated van and had been in the parking lot since the day before, in temperatures up to 95° F.

4. A strange odor (most likely from the burned carboys) was noticed Saturday night, the 7th, but not being located, it was ignored.

The fire post-mortem, in turn, led to the conclusion that the shipment of dangerous flammables should be more rigidly controlled, both in interstate and intrastate commerce. It is the opinion of several veteran fire fighters who reviewed the case, that special instructions for safe handling and fire fighting of such hazardous materials should be carried somewhere on the bill of lading and posted on the outside of the trailer. Unusual precautions, like refrigerating, should also be made a part of the cargo record and responsibility for this undertaking should be noted.

Trailers like this, carrying such dangerous cargoes, are part of the scene in almost every American city of size. They come and go with little remaining to record their passage—unless it be the scars and debris remaining after an explosion or holocaust. The cargoes are vital to our defense, to our progress and to our way of life. Just as necessary are the means and the information to keep these cargoes routed to a safe destination and not to the focal point of a disaster such as the one described. □□

SUCTION HOSE TESTS

Continued from page 849

available, it was assumed to be −14 psi and is so plotted on the graph sheet.

In Test Series 2, in which the hydrant capacity was but 270 gpm, it was quite clearly demonstrated that at such low flows pressure loss in suction hose and connections is a minor factor, for even with the 2½-inch suction there was a loss of but 5 pounds between hydrant barrel and pump intake.

These tests demonstrated to the Acton firemen that there is little to gain by the use of hard suction on a hydrant. Any slight increase in volume will very likely be at the cost of valuable time during the first critical minutes upon arrival at a fire.

It also seems obvious that much of the prejudice which still persists in some areas against the use of soft suction, stems from poor experience in which the difficulty was actually inadequate water supply. □□

There were 847,396 fires in U. S. communities of 2,500 or more population during 1957. This includes: 288,704 residential fires, 112,154 other building fires, 262,669 grass or brush fires, and 183,869 other non-building fires.

BADGES *of authority*

DESIGNED WITH DISTINCTION
EXECUTED IN METALS OF TIMELESS BEAUTY . . . WORN WITH HONOR AND RESPECT

Descriptive catalog free on request

Everson-Ross

55 VANDAM STREET
NEW YORK 13, N.Y.

The Fireman's Choice

Powerful Light
When he needs it—where he needs it
Big Beam
PORTABLE ELECTRIC HAND LAMPS

Model 700-A 2000-foot beam

Most powerful, heavy-duty hand lamp of its size. Adjustable 6-inch head. Operates on four standard No. 6 dry cells.

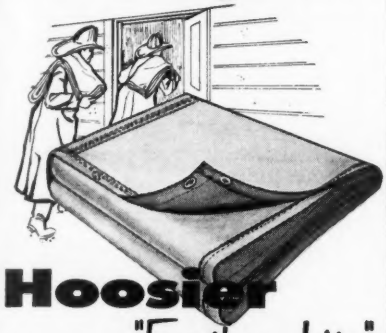
Model 211 1500-foot beam

Popular price, light weight, easy to carry. Adjustable 5-inch head. Holds two standard 6-volt lantern batteries. Operates on one; other is a spare.

Write for folder on complete information on these and other Big Beam dry-cell and storage-battery models.

U-C LITE MANUFACTURING CO.
1041 West Hubbard St., Chicago 22, Illinois
In Canada: Bernard Marks & Co., Ltd.,
70 Claremont St., Toronto 3, Ontario

75% Lighter!



Hoosier

NYLON "Feather-Lite"

SALVAGE COVERS

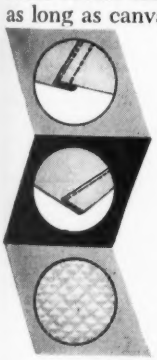
75% lighter than *wet* canvas, 40% lighter than *dry* canvas . . . a fireman can carry TWO of them up a ladder where he could handle only ONE canvas cover.

GUARANTEED 100% WATERPROOF

Protective covers that really *protect!* There's no question with *Hoosier Vinyl Coated Nylon.* Seams are electronically welded.

STRENGTH TO SPARE

Pull 'em, tug 'em, snag 'em, drag 'em; these covers can TAKE IT! Last twice as long as canvas.



Double lap felled seams are strong and watertight.

Triple thick 1½" flat hem provides extra strength.

Nylon base fabric shifts to resist tearing.

WON'T MILDEW

Roll 'em up when they're wet; it won't hurt 'em!

IN COLOR

Green or Fire Engine Red. And all Hoosier Nylon Salvage Covers are flame resistant – at no extra cost! Also Canvas Salvage Covers in 12 oz. and No. 12 11.45 oz. weights.

Write for Free samples today.

Hoosier

TARPAULIN & CANVAS GOODS COMPANY, INC.

Dept. FE, 1302 West Washington Street

Indianapolis 6, Indiana MElrose 2-9451

MANUFACTURERS' NEWS

Continued from page 856

Appointments and Promotions

Harold A. Jones has been appointed vice president and eastern manager for Motorola Communications & Electronics, Inc., a wholly owned sales and service

H. A. Jones R. N. Swift

subsidiary of Motorola, Inc. He had been the vice president in charge of the midwestern area. Jones replaces Lowell E. White who will be working on special assignments for Arthur L. Reese, vice president and general manager of the sales organization.

Robert N. Swift has been elected vice president and midwestern area manager, special markets in the midwestern area.

Walter E. Morgan, Jr. has been appointed a vice president of Walter Kidde & Company, Inc., Belleville, N. J., according to an announcement by John F.

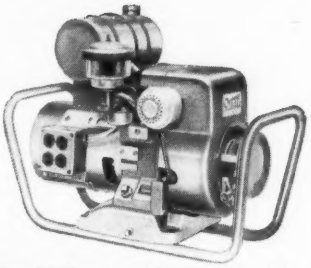
Kidde, company president. In his new position he will be responsible for the general management of the Kidde Industrial & Marine Division. Mr. Morgan is past president of the Fire Equipment Manufacturers' Association.

Walter G. Runyon and Whitman S. Campbell have been appointed full time representatives of the Gold Crest Safety Equipment Corp., Dunellen, N. J. Both were formerly connected with the New Jersey Fire Equipment Corp.

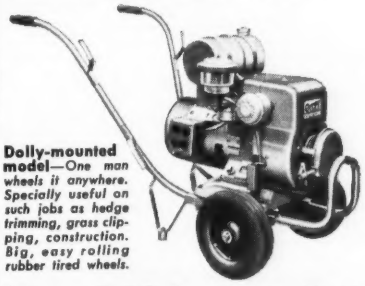
Harry G. Boyle has joined Allen B. Du Mont Laboratories, Inc., Clifton, N. J., as assistant manager, Industrial and Military Equipment Division. In the newly created post, Mr. Boyle, former sales manager for RCA's mobile

Onan
ELECTRIC PLANTS

ELECTRIC PLANT
NEWS



Carrying frame model—*Lightweight tubular aluminum frame for one or two-man carrying. Easily lifted in and out of pickup or around on the job site.*



Dolly-mounted model—*One man wheels it anywhere. Specially useful on such jobs as hedge trimming, grass clipping, construction. Big, easy rolling rubber tired wheels.*

New 1500 watt D.C. Onan Electric Plant

Here's more efficient portable power for all 115-volt D.C. and universal motors or tools and equipment. This new Onan power package, Model 115AK-115M, gives you more power per pound of electric plant, more power per gallon of gasoline. Recommended specially for turf maintenance, emergency rescue service, and fire department use.

Direct-connected, compact design

Rugged, single-cylinder, 4-cycle, Onan air-cooled engine starts quickly in any weather. Heavy-duty splash-proof generator is direct-connected to engine, making a rigid, compact, long-life unit. Standard equipment includes manual starter, oil-bath air cleaner and 4 plug-in receptacles. Carrying frame, 2-wheel dolly and recoil starter are optional at low cost.

Standard Model *For installation in maintenance trucks, on fire rigs etc. Converts to portable model with carrying frame or dolly.*

See your Onan distributor or write for information

D. W. ONAN & SONS INC.

2952A University Avenue S. E.
Minneapolis 14, Minnesota

CLASSIFIED ADVERTISEMENTS

Rate $12 per column inch, less 10% for three or more consecutive insertions. Closing date for copy, 25th of month preceding date of issue.
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1—Buick Ambulance, 1948 model, fully equipped, only 27,000 miles and in excellent condition.

1—1935 International Fire truck, 400 gal. Hale pump, 125 gal. Booster tank with 150 ft. Booster line. In very good condition with only 9615 miles.

1—1948 International tank truck, 1500 gal. tank with a power take off Booster pump, Beacon Ray light, model 66GH siren, completely rebuilt engine. In very good condition.

For information write to:
WEST END FIRE AND RESCUE CO.
29 Stewart Place
Shippensburg, Penna.

ABSOLUTELY FREE

Yours for the asking. Send post card today requesting Folder F showing complete line of belt buckles with your name or personal initials and latest Fire Engines, Pumpers, Hook and Ladder, Rescue Wagons, Salvage Trucks and other Firemen enameled emblems. Write:
HOOK-FAST
Box 1425
Providence, R. I.

PART TIME SALESMEN WANTED

Sell the finest fire alarm systems for homes or commercial places in your spare time. The demand for alarm systems is tremendous today. For free profit facts and product information write today.
FIRE-LITE ALARMS, INC.
192-O Fulton Terrace
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FOR SALE—USED WATER TANKS

Excellent for auxiliary fire fighting or stand-by storage—sizes 3500 gallons and up. Both semi and full trailers priced $500.00 and up.
THE HEIL CO.
Milwaukee 1, Wisconsin

PRICES REDUCED on used sirens
6 or 12 volts

Sirene Model M-1	$30.00
Federal's Fireball Light	$35.00
Model R-5-R Sirene	$49.50
Beacon Ray Lights	$50.00
Federal WLR Sirens	$49.50

CONVERT
your six volt sirens to twelve volts
TRADE IN YOUR OLD
sirens on LEADING BRANDS of new sirens and Beacon Ray Lights
For information and guarantee write:
EDWIN R. JENNY
2024 Heitman St.
Fort Myers, Fla.

FOR SALE
AMERICAN LA FRANCE PUMPER

Sealed bids will be received by the Village of Hempstead, N. Y. until 8 P.M. on October 21, 1958, for:

Bid A—One 1937 American La France 600 G.P.M. Centrifugal Pumper Hose Wagon with booster and 90 gallon booster tank; also 1,000 G.P.M. mounted worm gear Deck Gun.

Bids A-1—Same as above without Deck Gun. Equipment may be inspected by appointment with Fire Chief Walter Borgwardt, 318 Fulton Avenue, Hempstead, N. Y.

Bids must be marked "Bid A" or "A-1" as the case may be and sent to Lael Von Elm, Village Clerk, 99 Nichols Court, Hempstead, N. Y.

ITEMS TO SELL

(1) 350 GPM Used Northern Gear Pump with controls	$200.00
(1) Ambulance Cot with mattress, wool blanket, pillow sheet, pillow case and rubber sheet (like new)	$ 60.00
(7) 12 and 14" Crouse-Hinds Spot and Flood Lamps	Ea. $ 20.00
(60) 1½" Hose Coupling Expanders (List price $71.95)	Ea. $ 25.00

If you order 10 or more, $15.00 each.—
FOB Elmira, N. Y.
LAWLESS FIRE EQUIPMENT INC.
207 W. 3rd St.—Elmira, N. Y.

FOR SALE

One (1) 1941 Type 190 American LaFrance 65-ft. Aerial Ladder Truck with 100 GPM booster pump, 150 gallon water tank, 208 ft. of ground ladders and all standard equipment. Truck is now in service and in excellent condition. Contact: John A. Marshall.
UNION HOOK & LADDER CO.
Mount Kisco, New York

XMAS CARDS NOW!
FIRE PARTY HEADQUARTERS
OUR PARTY SPECIALTIES ARE PERFECT FOR YOUR NEXT BANQUET OR CONVENTION

Heavy Coasters depicting 4 Antique Rigs in Color. 12 Doz. $4.00 Ppd. Matching Cocktail Napkins. Box of 100 $2.25 Ppd. Large 4 Rig Place Mats, 50 mats $1.50; 100 Mats $2.75 Ppd. Place Cards with Ass't Rigs, 3 Doz. $1.00. 100 Cards $2.25. We will imprint your name or Organization for $1.00 per 100 Extra. Gift Wrapped Free.

Special Discount on Large Orders
Time to order your Fire Prevention Xmas Cards. Samples on Request.

HOBBY MATS
BOX 145 DEPT. F BALSAM LAKE, WISC.

NEW, AMAZING

device that holds firmly, 2½ gal. foam and S & A extinguishers while removing and replacing caps. Makes recharging a simple one-man job. Save time and temper by using this new extinguisher holder! Used successfully by firemen in military installations, industrial plants and in city fire depts. Unconditional money-back guarantee. Order now! $3.00 each or 2 for $5.00
ANDREW H. QUIRK
P. O. Box 1351, Hartford 1, Conn., JA 8-8223

POSITION WANTED

Presently employed in small city Fire Department. Firefighter 10 yrs. Captain 5½ yrs. of this time. Chances for advancement here too small. Age 35 yrs. good health. Would like tenure guarantee. Consider foreign employment as well as domestic.
Write Box No. 445, FIRE ENGINEERING, 305 East 45th St., New York 17, N. Y.

FOR SALE

1946 Buffalo 750 g.p.m. triple comb. pumper. Equipped with one 24 Ft. aluminum ladder, 1 roof ladder, hats, coats, hose reel, 200 gal. tank powered with Hercules Engine. Can be seen at
HILLCREST FIRE HOUSE
Spring Valley, New York

BUSINESS OPPORTUNITY

We need men trained in fire prevention to build their own sales and service organizations. Write for information on the splendid opportunities offered handling Notifier's outstanding line of automatic fire detection, sprinkler supervision, and municipal alarm systems.
NOTIFIER CORPORATION
Dept. F-E,
239 South 11th Street
Lincoln 8, Nebraska

FIRE PROTECTION EQUIPMENT SALESMEN WANTED

Manufacturer of top quality valves, deluge nozzles and fire department sundries has open territory in all States and Canada. Write full information including present lines and territory traveled.
Box 435
FIRE ENGINEERING
305 East 45th St.
New York 17, N. Y.

FOR SALE

A 1940 Seagrave, all steel aerial . . . 65 ft. 200 ft. of Ground Ladders (wood), Ladder Pipe, Axes, Pikes, Tools, Etc., Good Condition. Picture upon request.
For information write or phone:
R. E. SPENCE, CHIEF
Fire Department Headquarters
311 S. Green St.—Phone LE-4-3613
Gainesville, Georgia

communications equipment, will assist in coordinating the division's over-all industrial sales activities.

Literature Available

Walter Kidde and Co., Inc., 675 Main St., Belleville, N. J., has published a 42 page illustrated manual titled "Training Your Fire Brigade To Use First Aid Extinguishers." Subjects covered include: Organizing a brigade; training; and care and maintenance of fire extinguishers. Municipal and industrial fire chiefs and plant safety chiefs may obtain a copy by written request on official letterhead.

B. F. Goodrich Industrial Products Co., Akron, Ohio has published a new eight-page catalog on its line of protective clothing which illustrates and describes worksuits, raincoats, storm suits, and protective coats for firemen and policemen. A special section devoted to glove selection features a chart which compares the characteristics of rubber, neoprene and koroseal gloves in typical service.

Duo-Safety Ladder Corp., 513 West Ninth Avenue, Oshkosh, Wis., has published a new fire ladder catalog which gives complete specifications on the company's entire line. The 24-page, colorful, well-illustrated booklet also contains factual information on ladder maintenance safety and testing.

Keystone Valve Corp., 5325 Kirby Drive, Houston 5, Texas, has published Bulletin F-58, an interesting six-page two-color broadside describing the company's hydrant valves and their applications to fire department pumping operations and giving full engineering details.

Hykon Manufacturing Co., 163 East State Street, Alliance, Ohio, has issued a new eight-page, illustrated catalog and trade price sheet for its line of wire reels, cable reels, portable extension cord reels, reel lifters and wire meters and measuring equipment. □□

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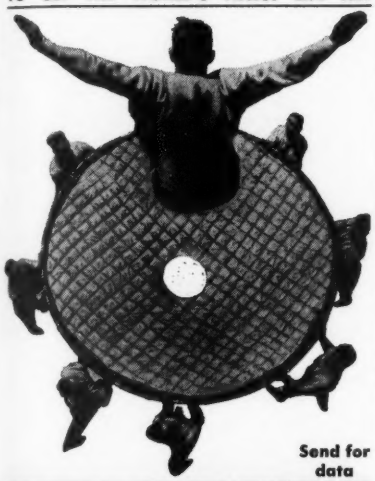
SPECIFY
SPECIFY
SPECIFY
ATLAS
TO GET THE WORLD'S FINEST LIFE NET



Send for data

ATLAS SAFETY EQUIPMENT CO., INC.
174 N. 10th St., Brooklyn 11, N. Y.

BODY-GUARD
BUNKER SUITS
FOR COMFORT & PROTECTION

WE ARE DISTRIBUTORS FOR
SIREN BOOTS

We have been supplying FIREMEN'S CLOTHING for over 36 years.

Any fireman can have a catalog by writing—

BODY-GUARD
MANUFACTURING CO.
ST. JOSEPH - - - - MISSOURI

Our Readers Write Us

More On Dick Vernor

To the Editor:

I have just finished reading your editorial in the July issue of FIRE ENGINEERING about Dick Vernor.

I would like to compliment you on this editorial as a wonderful tribute to this gentleman. As you pointed out, he will be sadly missed by a great many men working in the fire protection field.

I would also like to say that I look forward to reading your editorials in this magazine at all times.

Wm. F. McCarthy
Ethyl Corporation

To the Editor:

Thanks for the editorial in the current issue of FIRE ENGINEERING entitled, "Wanted—More Dick Vernors." This is a masterpiece.

We can certainly use more leaders with his vision and leadership ability. He is, as you put it, "an unforgettable and irreplaceable figure." I hope the stimuli of his great personality will be a challenge to another upon whom his mantle may fall.

Robert F. Hamm
Director, Public Relations
Fire Department Training
Indiana Rating Bureau

Liked Rating Board Article

To the Editor:

The article in the June issue of FIRE ENGINEERING "Make the Most of the Rating Boards" is excellent.

Although the article has no relation to this bureau that I know of, it accurately describes a policy that we have been following for years, and as a consequence, some pretty good results have been obtained.

S. E. Hottinger, Jr.
Municipal Engineer
Louisiana Rating and Fire Prevention Bureau

To the Editor:

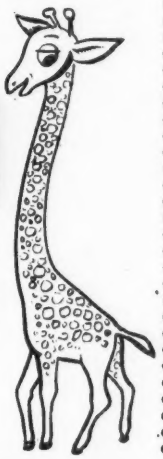
The article "Make the Most of the Rating Boards" in the June issue of FIRE ENGINEERING was most informative. It will help us explain to new members of our governing body the functions of the rating board.

Whenever a new member is elected to the borough council the chief or other officer has been given the task of explaining the relation of the rating organization and the fire service. This has now been simplified. With your permission we are making several copies for distribution to the mayor, councilmen and the borough clerk.

Robert S. Conway
Chatham, N. J.

PLANNING A FUND RAISING CAMPAIGN?

GET HIGH RETURNS with less effort at a nominal cost to you!



Handford Brown
COIN CARDS

The tested and proven way to raise funds. Used successfully by fire departments all over the nation. Holds up to $5.00 in quarters or $3.00 in dimes. Donations can now be given on the popular budget system.

WRITE OR PHONE FOR SAMPLES, DETAILS REGARDING DISTRIBUTION AND PRICES TODAY.

HANDFORD BROWN CO.
COYTESVILLE • NEW JERSEY
WINDSOR 4-0454

Big HIT at I.A.F.C. in Los Angeles!

NEW IMPROVED

No. B-800-SOS

PATENT PENDING

Exclusive *Dial-A-Tip* feature gives a variable straight stream equivalent to straight tips from 7/8" to 1 1/8".

- First hand line combination fog nozzle that will give a full Underwriters' stream (250 G.P.M. at 100 p.s.i.) in a straight stream position. Furthermore, this nozzle will produce a straight stream as small as that of a booster nozzle.
- Rated at 275 G.P.M. at 30° fog, 100 p.s.i. Also has 60° and 90° fog positions.
- Base of playpipe available in solid or swivel construction. Shut-off handle and stream indicator always on top.
- Scientifically balanced with bulk of weight forward — counterbalances weight of hose for easier handling.
- Lightweight—entire unit weighs only 15¼ lbs. Ball type shut-off is an integral part of playpipe and is so designed that straight tips may be used if desired, or a 1½" line may be attached directly to the end of shut-off.

ELKHART BRASS MFG. CO., Inc

ELKHART, INDIANA

More than half a century of fire fighting progress

ADVERTISING INDEX

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SEPTEMBER, 1958

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Halprin Supply Co.	870
Handford Brown Co.	883
Hoosier Tarpaulin & Canvas Goods Co., Inc.	881
Industrial Radio Corp.	872
Janesville Apparel Co.	878
Kelco Supply Co.	833
Kidde & Co., Walter	877
McCann Products Co.	876
McIntire Brass Works, Inc., F. N.	878
Mack Fire Apparatus	835
Memco Aerial Ladder Co.	870
Midwestern Safety Mfg. Co.	826
Minnesota Mining & Mfg. Co.	859
Morning Pride Mfg. Co.	876
Motorola Communications & Electronics, Inc.	830
Mueller Co.	873
Oberdorfer Foundries, Inc.	879
Onan & Sons, Inc., D. W.	881
Parco Products	876
Potter-Horn, Inc.	880
Powhatan Brass & Iron Works	831
Quaker Rubber Div., H. K. Porter Co., Inc.	868
Republic Rubber Div., Lee Rubber & Tire Corp.	861
Rockwood Sprinkler Co.	829
Russell Uniform Co.	878
Scharff, Inc., J. H.	877
Smith & Co., D. B.	866
Sterling Siren Fire Alarm Co., Inc.	875
Superior Signal Co., Inc.	880
Super-Vacuum Mfg. Co.	864
U-C Lite Mfg. Co.	880
W-B Manufacturing Co.	871

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